

VOL. 2 No. 3

MARCH

GENERAL SCIENCE 1915

THREE DAY LOAN

THE
**AGRICULTURAL
GAZETTE**
OF CANADA

DEMONSTRATION ORCHARD WORK.

THE MODEL SCHOOL GARDEN.



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DEPARTMENT OF AGRICULTURE
OTTAWA, CANADA

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VOL. 2, No. 3



March, 1915

DOMINION OF CANADA
DEPARTMENT OF AGRICULTURE

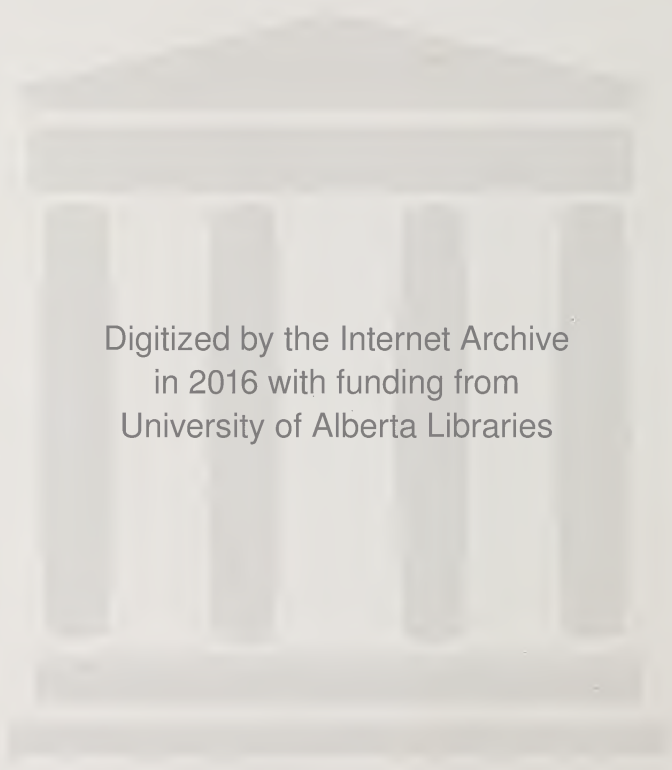
The Agricultural Gazette of Canada

EDITOR: J. B. SPENCER, B.S.A.

Issued by direction of
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The Agricultural Gazette

OF CANADA

VOL. II

MARCH, 1915

No. 3

THE AGRICULTURAL GAZETTE of Canada is published monthly, in English and in French, by the Dominion Department of Agriculture. It is not intended for general circulation. A limited number of copies, however, are available to subscribers at \$1.00 per annum, or 10 cents per copy.

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FOOD PRODUCTION ON CITY LOTS.

THE slogan, "Patriotism and Production," is proving effective in arousing interest and determination on the part of crop growers to put forth a special effort this year to increase the yields on their farms. Thousands in every province who have heard or read the message are working out plans for the securing of better than usual returns. Never in the history of the Department of Agriculture has there been so keen a demand for bulletins and reports that have been prepared to teach the best methods of agriculture.

Nor is the increased production movement confined to the rural districts. Towns and cities are taking it up by converting vacant property into gardens. The February GAZETTE told on page 183 how Regina is dealing with this problem and in this number the experiences and methods of other cities are described. This is a work that requires only a little encouragement and help from city and town councils, boards of trade, horticultural societies, improvement leagues and other organizations to accomplish a great deal. To set this movement going is to commence a revolution toward civic beautification, as it at once means a thorough and permanent clean-up, without cost to the community, of vacant areas that are too often weed infested dumping grounds. It means more than this—the providing of quantities of health-giving foods in the form of fruits and vegetables fresh from the soil, besides flowers to enjoy and to be given away. The cultivation of fruits, vegetables and flowers has a great moral influence and tends towards better citizenship.

A plan for the guidance of civic bodies to launch and carry on this movement has been worked out by Mr. W. T. Macoun, Dominion Horticulturist. It appears in this issue under the title, "A Patriotic Vegetable Gardening Competition."

THE PANAMA-PACIFIC EXPOSITION.

THE Honourable Martin Burrell, Minister of Agriculture for Canada, on February 25th represented the Dominion at the dedication of The Canadian Building of the Panama-Pacific Exposition, now being held at San Francisco, California.

"It is at once an honour and a privilege officially to identify our building as a part of your marvelous exposition. We have endeavoured, I trust with some success, to make the structure worthy of a place amongst the noble examples of architecture which grace this historic water front. We have striven in our exhibit to illustrate the character of our natural resources and to portray their development and have tried to reflect in some measure the varied activities of the eight millions of people who are your northern neighbours. We are inspired with the same ideals of democracy, and our nation, like your own, has been and still is engaged in subduing the wilderness, peopling its waste spaces and wresting from the forest the field and the mine those things which minister to the needs and the comfort of mankind.

"I but voice the sentiments of your visitors in saying that the magnificent structures which have been erected here, and the rich and varied examples of man's handiwork and nature's products which they contain, make more than a local, more than even a national appeal. The exposition in its entirety strikes a universal note. It exemplifies and sums up the march and progress of modern life and creates new and higher aspirations. Its noblest lesson, its loftiest message, is surely this: That the arts of peace and the service of our common humanity demand the exercise of man's fullest powers, challenging all that is strongest and best in his nature, and in meeting that call his energies and ceaseless activities will find their truest expression and man himself his deepest happiness.

"Once more, Canada gladly tenders you her tribute of praise and active co-operation. Your Government invited all nations of the earth to take part in this exposition, and they have finely responded. That Canada's participation should be prompt and whole-souled is both natural and fitting. The social and industrial intercourse of our peoples, vast in volume and happy in character, is yearly increasing. From the distant East, where the Atlantic breaks on the rock-bound coast, to the far-flung West, there exists for three thousand miles the longest and safest border in the world. Through many miles of fertile prairie the people of both countries shake hands across an invisible line. Our very nearness has created peculiar difficulties and differences, but for one hundred years the arbitrament of the sword has been thrust aside for that finer and successful appeal to the sober and reasoned judgement of the national mind.

"And now, sir, having spoken as the representative of the Government of Canada, I have the honour to discharge a further and special duty, that of delivering to you a message intrusted to me by my august sovereign.

"The King feels that there is no doubt this great undertaking will be attended with marked success and prove worthy of the vast achievement which it celebrates.

"His Majesty rejoices to think his Dominion of Canada is taking part in this exhibition, and thus testifying to the appreciation of the British Empire at the linking of the Atlantic with the Pacific and at the happy results which may be expected from the mingling of the waters of the two oceans.

"I am also charged with a message from His Majesty's Government expressive of their good wishes, and those of all British subjects to the organizers of the exposition. May it be a good presage for the peace and happiness of the world."

PART I.

Dominion Department of Agriculture.

INFORMATION SUPPLIED BY OFFICIALS OF THE VARIOUS
BRANCHES REPRESENTED.

THE DOMINION EXPERIMENTAL FARMS.

THE DIVISION OF HORTICULTURE.

FRUIT CULTURE AT THE EXPERIMENTAL FARMS.

BY W. T. MACOUN, DOMINION HORTICULTURIST.

AT the time the Dominion Experimental Farms were organized in 1887 comparatively little reliable information was available in Canada on the varieties of fruits best suited to different sections of the country, although certain private individuals interested in horticulture had contributed through the Ontario Fruit Growers' Association, the Nova Scotia Fruit Growers' Association, and the Montreal Horticultural Society much valuable information based on their personal experience, but the information was available mainly to the members of the Societies who received the annual reports. It seemed, therefore, the first duty of the Government to determine by experiment, at least at the few points where the farms were established what varieties were best for these parts of Canada, and during the past twenty-five years many varieties have been under test with the result that definite information is available to a large number of people. Not only has the Government depended for its information on the results

obtained at its own farms and stations, but when bulletins were published, as they have been on a number of kinds of fruit, the experience of private individuals scattered over many parts of Canada was taken advantage of when publishing lists of recommended varieties.

During recent years more attention has been paid to cultural methods than was possible at first, and at the newer Stations especially, where the orchards have been planted with a view to cultural work, valuable information will soon be available.

Since the year 1890 experiments in spraying fruits, vegetables and ornamental plants to prevent destruction by injurious insects and fungous diseases, has been an important part of the work.

Beginning with the year 1898 and for seventeen consecutive years, records have been kept of the yields of individual trees in the orchards at the Central Farm with the result that there are now available a mass of figures in regard to the time of bearing, regularity of bearing, and

productiveness of different varieties of fruits which, so far as we are aware are more complete and cover a longer period, than those of any other institution. These figures have shown that trees of the same variety vary much in productiveness, though planted at the same time and growing apparently under very similar conditions, and while it is not known yet whether such characteristics will be perpetuated by grafting, trees are now bearing which have been propagated from trees bearing good crops every other year, every year, and another bearing a relatively small crop.

The use of cover crops in the orchards has been strongly recommended by the Horticultural Division for the past nineteen years and many kinds of plants have been tried, to determine which were the best for use, the information obtained being published in the annual reports and elsewhere.

The top-grafting of tender varieties on hardy stocks has occupied the attention of the horticulturist and information has been published which shows that top-grafting tender varieties on hardy stocks does not, as a rule, make them sufficiently hardier to withstand cold winters.

The origination of new varieties of apples has been an important part of the work since the year 1890, when three thousand Russian apple seedlings were planted at Ottawa and since that time, both by cross-breeding and by the growing of seedlings pollenized naturally, many trees have been raised to fruiting age and a large number of really promising varieties have been produced of which a number have been named. These are now being tested by the Branch Farms and Stations and by private individuals and it is expected that some of them will take their place before many years among the best commercial varieties. In Volume 1, No. 4, April, 1914, of THE AGRICULTURAL GAZETTE, a fairly full account is given of the work with apples at the Experimental Farms.

Several useful bulletins have been published on the following:—apple culture, cherry culture, peach culture, plum culture, strawberry culture, bush fruit culture, as well as several pamphlets including one on grape culture and several spraying calendars, and the annual reports from 1888 to 1914 contain very much information of value.

TREE FRUITS IN THE PRAIRIE PROVINCES.

TREE fruits have been given a very thorough test at the Experimental Farms in the Prairie Provinces and while the ideal apple has not yet been obtained for general culture on the prairies, continuous progress is being made.

As an example of what is being done at these Farms, the work at the Indian Head farm may first be mentioned. When this farm was established in 1888 it consisted of a treeless area of land. Trees were at once planted as shelter belts, but it was some years before they afforded much protection. In 1888 there were 60 varieties of apples planted on the open prairie, represented by

200 trees; 30 trees of 8 varieties of plums; 34 trees of 7 varieties of cherries; 20 trees of 7 varieties of pears; and 3 peach trees. Most of these made good growth that year. One hundred and twenty-five apple trees survived the first winter, but only 1 pear tree, 11 plum trees and 3 cherry trees. In the spring of 1889, 43 varieties of Russian apples consisting of 342 trees were planted, of which 257 were alive in autumn. There were also planted 109 crab apple trees of eight varieties. The winter of 1889-90 killed a large proportion of the apple trees planted in 1889 and only 6 crab trees were alive of those planted in 1889. It is

interesting to note that among the few varieties which were hardy to the tip in 1890 were the Duchess and Hibernial, which have since been successfully fruited in some parts of the prairies. In 1890, there were 500 Russian apple seedlings planted. These stood the winter of 1890-1891 without loss, but in the winter of 1891-92 every tree was killed, one Red Siberian Crab Apple tree planted in 1888 being the sole survivor in 1892 of the apple and crab apple trees planted. Seven varieties of Russian apples planted in a sheltered place in 1892 succumbed the following winter. Mr. Angus Mackay writes thus in his report for 1893: "The lonely Red Siberian Crab that has weathered four winters, and last year had a few blossoms on, succumbed this spring, and is now numbered with many others of its kind gone before." Most of the plums and cherries had died. Twenty-seven more Russian varieties of apples represented by 184 trees were planted in 1893 in a plot well protected by maple hedges. Only 36 of these were barely alive in the spring of 1894. Thirty-two trees of seven Russian varieties were planted in a maple plantation of which 15 died the first winter. Native Manitoba plum trees were planted in 1894 and 1895 and plum trees began to bear fruit in 1896. Plantings of many varieties of apples have been made from time to time since, but with little success.

A wild crab apple *Pyrus baccata*, the seed of which had been obtained from St. Petersburg, Russia, having proved hardy, Dr. Wm. Saunders then Director of the Experimental Farms, conceived the idea of crossing this with the larger apples in order to if possible, obtain hardier cultivated varieties, the work being begun in 1894. Many hundred crosses resulted; the trees were later sent to Indian Head and by 1899 the trees began to fruit and to-day the varieties Charles, Silvia, Jewel, Tony and others are proving reliable varieties

for Indian Head and many other parts of the prairies. It is true the fruit is small and crab-like, but these fruits mark a step in advance.

These crosses were again crossed by Dr. Saunders with the larger fruited, though tenderer varieties of apples, with the result that fruit from two to two and a half inches in diameter has been obtained. Trees are now being propagated for test on the prairies and it is expected that some of them will prove hardy.

At the Lethbridge Station the conditions are more favourable for apple culture, and apple trees have fruited during the past two years and there is every evidence that the trees will continue to prove hardy. At the other prairie farms the climatic conditions are little if any more favourable than at Indian Head, except at Brandon, which is somewhat better. At none of the farms, however, with the exception of Lethbridge, have apple trees survived for any length of time without protection.

Some fifty thousand Russian and other hardy apple Seedlings are now being grown in nursery rows at the prairie farms with the object of subjecting them to several winters before they are put out in orchards, by which time the hardest will be known.

By growing trees in well protected places, protecting the trunks and main branches with sacking in winter and using only the hardiest varieties such as Charlamoff, Duchess and Hibernial, apples can be and are being produced in many places on the prairies, particularly in Southern Manitoba where so much protection is not necessary. What is needed are varieties of apples as hardy, or nearly as hardy, as the native trees and shrubs and it is the duty and endeavour of the Experimental Farms to obtain such varieties and it is with confidence that ultimately such apples and other fruits will be found that the work is continued from year to year.

A PATRIOTIC VEGETABLE GARDENING COMPETITION.

MR. W. T. Macoun, Dominion Horticulturist, has recently been addressing meetings in the Patriotism and Production Campaign, and has been urging the people of the cities, towns and villages to grow more vegetables this year and to increase production, and also save some money that might be devoted to needy war funds. The following suggestions for Patriotic Vegetable Gardening Competitions have been prepared by Mr. Macoun in the hope that they may prove useful. Already competitions are being organized as a result of Mr. Macoun's efforts and addresses.

A COMPETITION PLANNED TO AID THE EMPIRE AND TO HELP YOU.

The British Empire will need all the food that can be made available in 1915. Everyone in cities and towns with vacant land can produce some food if he will. By growing vegetables for your household you will release food for someone else, that would have been sold to you. By growing vegetables for your own use, you will also save most of the money that you would otherwise have paid for them, which you can give to the many needy war funds should you care to do so. Vegetables fresh from the garden are much more appetizing than those which have been gathered for some time. You will, if you grow your own, find that you will eat more vegetables than you have been accustomed to, and will have less desire for the more expensive kinds of food.

RULES OF THE COMPETITION.

The rules governing the competition have been made as simple as possible, so that everyone whether he knows little or much about gardening has a chance of winning a prize.

It is presumed that many will enter who never gardened before and whose yards are at present in a very rough condition, and this has been taken into consideration when the rules were made.

Size of Gardens:—Gardens entered for the competition are to be 1000 square feet in area. In other words, they should be 50 x 20, 40 x 25, 30 x 33½, or any other shape that will give the required area. Potatoes are excluded from the general garden but may be grown alongside, and, if possible a special prize or prizes will be given based on the same points as for the general garden. There is no restriction as to size of plot in the case of potatoes.

Times of Judging:—The gardens will be visited six times by the judge, or judges, once before any work is done and then once a month in May, June, July, August and September.

Score of Points:—Each month, after the first visit, there will be a possible maximum of the following points, a total of 500 points for the season. At the first visit the points for difficulties (to be) overcome will be the only ones considered, full notes being taken on the condition of the land. A score will be made at the second visit from the notes taken at the first and from the improvements that have been made.

Quantity and Value of Vegetables	20	points
Quality of Vegetables	20	"
Assortment of Vegetables	20	"
Difficulties overcome	20	"
Cleanliness and neatness	20	"
	100	"

Quantity and Value:—The quantity of vegetables grown will be decided both from the observations made by the judge, and by assigned statement from the householder showing how much of each kind of vegetable was gathered and the approximate value of the same.

Quality.—By quality is meant condition of development and uniformity, and any other factor that affects the value of the product, except that of palatability, for the judge will not be expected to test the eating quality of the vegetables.

Assortment.—By assortment is meant the number of kinds of vegetables grown. There should be a fair proportion of each kind.

Difficulties overcome.—The judge will take into consideration the difficulties which each competitor faces when beginning his garden operations. If one competitor has many difficulties to overcome he will receive a high score under this head, but another competitor with fewer difficulties will get compensation in other ways.

Cleanliness and Order.—Freedom from weeds, insects, and diseases, good cultivation and straight lines come under this head, or in other words, the general appearance of the garden will be considered.

HOW TO GET INFORMATION IN REGARD TO VEGETABLE GARDENING.

The judge, or judges, will furnish pamphlets free giving information on the best varieties of vegetables to plant, the general preparation of the soil, a suggested arrangement of vegetables in the garden (which need not necessarily be followed), directions for controlling injurious insects and diseases, and cultural directions for the different kinds of vegetables. It is expected also that information not covered by the pamphlets will be cheerfully supplied by the committee.

NOTE.

KILLED IN ACTION.

Upon the breaking out of the war, Mr. Paul Humbert, of the Tobacco Division, Department of Agriculture, was summoned to the French colours. A vivid picture of the soldier's life, taken from a letter written by him to a friend in the department, appeared in the local press some little time ago, under the title of "A Night in the Trenches."

Mr. F. Charlan, Chief of the Tobacco Division, has just received a letter from Mr. Humbert's father, announcing his son's death on the

battlefield, while leading the men of his section in a successful attack upon the German trenches. While the letter indicates only too clearly the grief felt by both father and mother at the loss of their son, it also gives us a glimpse of the spirit of proud sacrifice which is nerving the people of France to-day.

In closing, Mr. Humbert says, "I leave it with you to convey this sad news to the Canadian authorities and also to those friends whom his frank and loyal nature had won during his stay among you."

The Honourable Martin Burrell, Minister of Agriculture, when in California representing the Dominion at the dedication of the Canadian Building of the Panama-Pacific Exposition paid a visit to the Panama-California Exposition being held at San Diego. On arrival there, the Minister was escorted from the station to his hotel by a squadron of the first cavalry of the United States. Afterwards a special parade of the United States Marine corps battalion was given in Mr. Burrell's honour, after which he reviewed the command.

THE CEREAL DIVISION.

NEW VARIETIES AND SELECTIONS OF CEREALS.

BY CHARLES E. SAUNDERS, PH.D., DOMINION CEREALIST.

THE practice of numbering new varieties and selections of grain, instead of giving them names, when introducing them to the public, originated, I believe, at the Minnesota Experiment Station about twenty years ago. Since that time it has been adopted by other institutions and has now become quite popular. This system has obvious advantages from the point of view of the experiment station. It keeps the name and work of the station well to the front and saves the trouble of choosing good names. The disadvantages are, however, very great. Numbers are always difficult to remember and easy to alter by mistake. Besides, when one is dealing with a selected strain of an old and well known variety of grain, it is quite unfair to the public—to say the least—to drop the original name of the variety, and thus hide the identity of the selected strain, which often differs scarcely at all from the parent sort.

For instance, a selection from the common kind of spring wheat, Blue Stem, was introduced under the name Haynes' Blue Stem. Such a designation was rational and satisfactory, retaining as it did the name of the variety and the name of the experimentalist who made the selection. But when a further selection was made from this and was introduced as "Minnesota No. 169," the fact that it was still essentially the old, familiar Blue Stem—with its serious defects of lateness and liability to rust—was obscured, and the public was given the false impression that a remarkable discovery of a new wheat had been made. Such a false impression was of course not intended, but it was inevitable in the system of number-

ing adopted. This latter objection is not applicable where an actual new variety, produced by cross-breeding, is being introduced; but even then the use of a number, without a name, is primitive and unsatisfactory.

Of late years these numbers have come into such general use that any institution which does not employ them is in danger of giving the impression that it has accomplished very little and has no new varieties or selections to its credit. It therefore seems necessary to adopt this system, in a modified form however, in connection with the cereal breeding work carried on at Ottawa by the Dominion Cerealists. The writer has assigned numbers to all the more important cross-bred varieties and selections which he has introduced. Some of these are of his own breeding, and all the others are his selections from earlier cross-bred sorts or from commercial varieties. These numbers are to be regarded as an addition to, rather than a substitute for the names, which will be carefully retained.

In order to avoid an absurdly long designation, only the word "Ottawa" is prefixed to the number, the words "Central Experimental Farm Number" being understood. The numbers adopted do not follow each other regularly, because the system of records for cross-bred varieties which has been in use for many years has indicated to a certain extent the numbers which should be adopted.

The following list includes all the sorts to which Ottawa numbers have thus far been assigned. A few of the varieties here mentioned have lately been dropped from the lists of recommended sorts, but they are all good. Many of them are the leading varieties before the public to-day:—

VARIETIES OF CEREALS.

SPRING WHEAT.

*Old Designation.**New Designation.*

Alpha Selected.....	Alpha, Ottawa 1.
Percy, Selection A.....	Percy, Ottawa 2.
Huron Selected.....	Huron, Ottawa 3.
Preston, Selection H.....	Preston, Ottawa 4.
Stanley, Selection A.....	Stanley, Ottawa 5.
Bishop, Selection A.....	Bishop, Ottawa 8.
Chelsea.....	Chelsea, Ottawa 10.
White Fife, Selection C.....	White Fife, Ottawa 11.
Yellow Cross.....	Yellow Cross, Ottawa 14.
Marquis.....	Marquis, Ottawa 15.
Early Red Fife.....	Early Red Fife, Ottawa 16.
Red Fife, Selection H.....	Red Fife, Ottawa 17.
Early Russian.....	Early Russian, Ottawa 40.
Prelude.....	Prelude, Ottawa 135.
Pioneer.....	Pioneer, Ottawa 195.

OATS.

Eighty Day, Selection B.....	Eighty Day, Ottawa 42.
Daubeney Selected.....	Daubeney, Ottawa 47.
Banner, Selection B.....	Banner, Ottawa 49.

BARLEY, 6-ROW.

Manchurian, Selection A.....	Manchurian, Ottawa 50.
------------------------------	------------------------

BARLEY, 2-ROW.

Early Chevalier.....	Early Chevalier, Ottawa 51.
----------------------	-----------------------------

SPRING RYE.

Ottawa Select.....	Select, Ottawa 12.
--------------------	--------------------

WINTER RYE.

Dominion.....	Dominion, Ottawa 13.
---------------	----------------------

PEAS.

Arthur Selected.....	Arthur, Ottawa 18.
----------------------	--------------------

FLAX.

Longstem.....	Longstem, Ottawa 52.
Novelty.....	Novelty, Ottawa 53.

ORIGIN OF VARIETIES.

A few words of explanation in regard to the origin of some of the varieties seems desirable. About half of those mentioned are new cross-bred sorts, while the remainder are selections from old varieties.

Early Red Fife wheat is a distinct selection from Red Fife, easily recognized and ripening usually about a week before the ordinary type. Unfortunately this advantage is accompanied by a greater susceptibility to rust in some climates. However, *Early Red Fife* has an excellent record in the drier parts of Saskatchewan and Alberta.

Early Russian wheat is a selection from a variety of Russian origin. It is similar to White Russian in some respects but ripens earlier.

The *Eighty Day oat* is a selection

from the commercial oat commonly called *Sixty Day* or *Orloff*. The selected strain is fully as early as the parent. It ripens in about eighty days at Ottawa. It has short straw and small kernels, but usually gives a very fair crop. It is of particular value in cases where great earliness is essential.

Manchurian barley is a selection from *Mensury*.

Early Chevalier barley is an early ripening strain selected out of French Chevalier.

Longstem is an unusually tall type selected out of common flax, and *Novelty*, which promises to give a very good yield of seed, is a selection from *Novarossick*.

Full descriptions of most of these Ottawa varieties and selections have been published in the annual reports of the Experimental Farms.

THE DAIRY AND COLD STORAGE BRANCH.

PROBABLE SCARCITY OF RENNET FOR THE MANUFACTURE OF CHEESE.

BY J. A. RUDDICK, COMMISSIONER.

DURING the last 30 years, the rennet used by Canadian cheesemakers for the curdling of milk has been procured in the form of an extract prepared from calves' stomachs. The stomachs have come chiefly from continental Europe and especially from Germany. This supply is now stopped and it seems quite likely that before the war is over Canadian cheesemakers may have some difficulty in securing sufficient supplies of rennet extract to meet their requirements.

Before the introduction of the commercial extract of rennet the cheesemaker used to prepare his own extract by soaking the calves' stomach in water. It must be admitted, that judged by modern standards, there were very great objections to this method as the older cheesemakers will easily remember. However, in case of necessity through failure to secure the prepared extract in sufficient quantities it would be quite practicable to revert to the old practice.

For some years previous to the introduction of the rennet extract cheesemakers were able to secure what was known in the trade as Bavarian "rennets". These were calves' stomachs that had been carefully prepared and dried so that they could be kept without deterioration for some time. In still earlier days it was the practice to secure the calves' stomachs from the farmers supplying milk to the factory. Indeed at one time, in some districts at least, it was the rule that each patron had to furnish the cheesemaker, gratis, with as many calves'

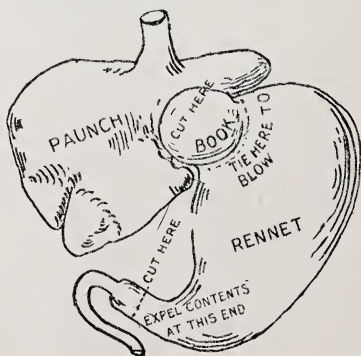
stomachs or "rennets" as he had cows in his herd. If some of the calves were raised it was necessary to secure as many stomachs from some farmer who was not sending milk to a factory.

The saving of calves' stomachs for this purpose is now practically a lost art in this country. For that reason it would seem to be advisable that some instructions should be given as to how the stomachs should be prepared for this purpose.

Canada's supply of rennet extract comes chiefly from the United States, there being no manufacturers of this article in Canada.

Chr. Hansen's Laboratory, Little Falls, N.Y., one of the principal manufacturers of rennet extracts, gives the following directions for saving and preparing calves' stomach for this purpose:—

Butchers or Farmers, many of whom have handled rennets in the old countries and are familiar with their preservation, can make a good



business of collecting and preparing rennets in this country where they have heretofore mostly been thrown away.

Only the rennets from sucking or milk-fed calves are valuable. The stomachs of calves raised on grass or other solid food are not good for the purpose.

DIRECTIONS.

When the calf is killed, immediately cut out the rennet, leaving a portion of the third stomach (the book) attached to it.

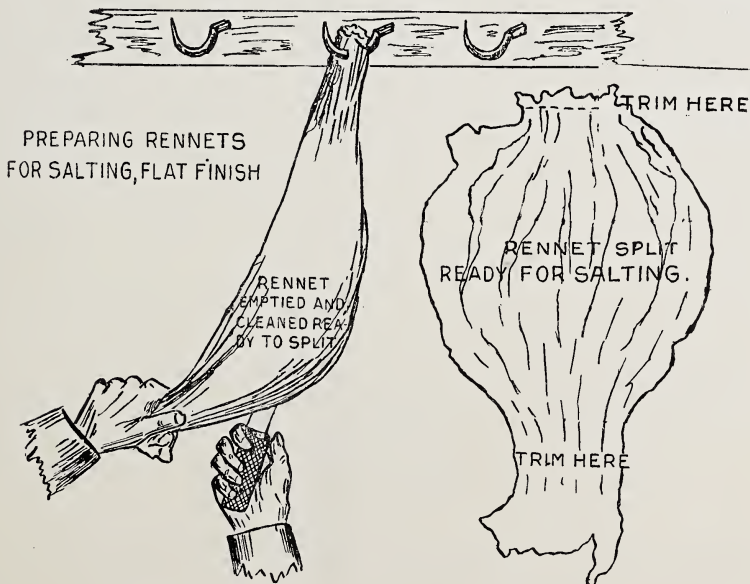
Carefully squeeze out the contents of the rennet (consisting of coagulated milk or other partially digested food), but do not turn the rennet inside out or wash it, as that would cause a loss of part of the ferment. Rinse off any dirt from the outside (but not inside) and trim off any adhering fat.

Either of the following methods may be used for preparing the rennets for shipment to the Laboratory.

Blowing up the Rennets.—Tie up the opening in the large end, applying the string at the narrow passage between the third stomach or book, and the rennet. Insert in the opening of the long neck at the other end a small tube of glass or any other material, blow up the rennet as hard as possible, like a football, and tie up with a string under the tube. Where many rennets are handled it is convenient to have a pointed tube connected with air-pressure to inflate them. The long, narrow neck contains but little of the ferment and may be cut off after drying.

Hang the inflated rennets to dry in a draughty shed or a warm, dry room, but do not expose them to more heat than that of an ordinary warm room. Never hang rennet in the open, exposed to the sun.

Where a fan can be used to create draft it will help dry the rennets quickly, and the process should not take more than a week. They should not be left moist long enough to mold or putrefy, and care should



be taken that they are not infested with maggots or insects after being dried and bundled for shipment—i.e. they should be thoroughly dried and carefully protected from flies and other insects.

When a sufficient number of thoroughly dried rennets have accumulated, cut off the neck and let out the air; tie up the rennets in bundles of 25 or 50, and pack in cases or barrels.

Fresh Salted.—When it is not convenient to blow up and dry the

rennets, they may be prepared for immediate shipment by splitting open and salting.

Squeeze out the contents of the stomach, trim off the fat, split open and cut off book and small end. Salt thoroughly on both sides, using sufficient, so that after allowing them to drain, there will still be plenty of dry salt left between the rennets. Leave them in a cool place to drain over night, then pack for shipment in a tight tub or barrel.

THE ENTOMOLOGICAL BRANCH.

THE INSECTIVOROUS HABITS OF THE MOLE IN BRITISH COLUMBIA.

BY R. C. TREHERNE, B.S.A., FIELD OFFICER, ENTOMOLOGICAL LABORATORY, AGASSIZ, B.C.

WHILE no definite experiments have been pursued on the insectivorous habits of the common field mole, evidence is accumulating which indicates that this animal is sometimes of a great deal of value to the farmer in the control of his insect pests. The unsightly mole hills in lawns and gardens, of course, immediately class it as a nuisance. The farmer also condemns it for its habit of 'running' under the root systems of his crops and plants. Corn hills, strawberry plants, clumps of roots in the herbageous border may be lifted and disturbed to such an extent that the wind and sun can reach the roots often causing death by drying out.

Despite these objectionable features, the fact must be borne in mind that soil-infesting insects, such as wireworms, cutworms, root-maggots, weevil larvae, etc., are readily devoured and, as it would appear, are the prime reason for the presence of moles in a piece of land.

We are indebted to Mr. E. M. Anderson, Zoologist, of the Provincial Museum, Victoria, B.C., for the fol-

lowing reply to a letter regarding the species present in the Lower Fraser Valley of British Columbia. "I may say two species occur on the Lower Fraser, viz., Townsend's mole (*Scapanus townsendii*, Bach), and Gibb's mole (*Neurotrichus gibbsii*, Baird). The latter is the commoner of the two, ranging from Burrard Inlet as far east as the Okanagan, while to my knowledge *S. townsendii* has been recorded only at New Westminster and Burrard Inlet. The two cannot be mistaken, as *S. townsendii* is about six inches in length, while *N. gibbsii* is only three."

From this we may judge, that the species we have special reference to, in this note is *Neurotrichus gibbsii*.

During the investigation on the life history of the Strawberry Root Weevil in the Lower Fraser Valley during the summers 1912, 1913, it was considered that the mole was probably its most important predatory enemy. An account of its habits in relation to the weevil larvae with illustrations, may be seen in Bull. No. 18, (Second series, Experimental Farms Branch, Depart-

ment of Agriculture, Ottawa), on the Strawberry Root-Weevil, pages 29, 30, consequently it will not be necessary to say anything else but draw attention to it.

During the past summer of 1914, a moderate outbreak of the Variegated Cutworm, *Peridroma saucia*, occurred in the Lower Fraser Valley and we had further occasion to note the habits of moles, in connection with the larvae of this moth. At points where the cutworms were most numerous the foliage of red currants, cabbages, turnips and mangels was freely devoured. In the red currant plantation on the grounds of the Experimental Farm, Agassiz, B.C., as many as 60 larvae were taken at one time from around an individual bush. Each red currant bush suffered damage in equal proportion and the average number of larvae taken from several bushes examined varied between 50 and 60. At the time these examinations were made it was noted that a mole 'run' passed beneath each of several bushes. By passing the hand along these 'runs' it was observed that the animal had moved in practically a direct line from bush to bush, at times encircling the outer roots and at others passing under the mainroots. The average depth of the 'run' varied from 3-6 inches, consequently from circumstantial evidence, the presence of the mole was accounted for by the amount of animal food (larvae) available.

In the cabbage plantation as in the rows of turnips, the 'runs' were noticed to have passed from plant to plant for quite a considerable distance in the row, where cutworm larvae abounded. In the cabbage rows particularly, it was noted that frequently a blind alley leading to the roots of the plant could be followed, returning again to the main

'run' which passed along the length of the row.

In the sections of the cabbage and turnip plantations which did not suffer from cutworm attack to any appreciable extent, 'searching' burrows or trails, leading to no apparent destination, could be seen. This was interesting as it indicated that those burrows, which followed a definite plan of plant visitation, showed a positive preference towards the presence of larvae.

Raillet, a French author, informs us that the mole is mainly an animal feeder and only under starvation conditions does it devour vegetation. He has also estimated that a mole is capable of eating twice its weight of animal food in a day.

In a recent study of the European Mole, (*Talpa europea*), in Great Britain, White analyzed the stomachs of 100 specimens. It was found that earth-worms and leather-jackets, which are root destroying larvae, constituted the chief items of the animal's diet, which was made up chiefly of the following; earth worms in 92 per cent of the stomachs, leather-jackets in 87 per cent, centipedes in 50 per cent, wire worms in 41 per cent.

Other authors, who have studied the habits of moles, in general are unanimous in the belief that vegetable matter in the stomachs of moles is accidental rather than intentional, and some have shown that moles may be readily starved to death by feeding only on vegetable food.

Consequently, with these facts before us, we are correct in assuming that the insectivorous habits of the mole in British Columbia are important aids to the farmer in the control of soil-infesting insect pests, and unless they are present in exceptional numbers, the mole's good points in all probability outnumber the bad.

NOTES.

Mr. J. R. Gareau has been appointed a Field Officer and Inspector of the Entomological Branch in the place of Mr. H. F. Hudson who has left the branch to join the Second Canadian Contingent in which he is serving with the 16th Battery of the Canadian Field Artillery. Mr. Gareau is a graduate of the Quebec Forestry School, and since graduating has been employed in the Provincial Forest Service of British Columbia and has also taken courses in Entomology in the Leland Stanford University, California. He will be stationed at the branch's field laboratory at Strathroy, Ont., and ultimately he will be assigned to the Division of Forest Insects.

THE WAR AND IMPORTED NURSERY STOCK.

It was expected that there would be this season a very serious diminution in the quantity of nursery stock imported from Europe. The decrease has been much less than was anticipated. A large amount of the Belgian stock was shipped in the early days of the war and as it

happens the nursery section is not in that portion of Belgium that has been the scene of the most active military operations. The Holland shipments have suffered very little and the Dutch nurserymen who with the Belgians, supply the greatest proportion of the azaleas used for potting purposes, and bay trees, etc., are actively soliciting trade in these classes of nursery stock and in bulbs. It is anticipated that the withdrawal in France of so many men for active service will materially affect the French nurseries which supply the bulk of the seedling stock used by our nurserymen for grafting purposes. Nevertheless, every effort is being made to produce seedling stock in as large quantities as possible.

It is almost certain, however, that the effect of the war will be seriously felt next season both on account of the reduced production and the increased cost of sea transport and it would be well for Canadian nurserymen and florists to be prepared to meet the shortage in ornamental, fruit and other classes of nursery stock now imported from European countries.

THE FRUIT BRANCH.

THE FUTURE OF APPLE GROWING.

BY DONALD JOHNSON, COMMISSIONER.

I have travelled over all the fruit producing districts of Canada during the past year and have been amazed at the huge plantings which exist. I knew before that Canada had some 25,000,000 fruit trees, but had never realized what these figures meant until I came in contact with the orchards and it was pressed home to me that there was a day not far distant when Canada

would be face to face with over-production. In the famous Annapolis Valley of Nova Scotia, not more than 50 per cent of the apple trees are bearing and those that are bearing are still young and far from yielding their maximum amount of fruit. The orchards are situated in a valley some 100 miles long and an average of about 6 miles wide. In this valley apples are the main pro-

duct of the land, and the good care that the growers are giving their trees assures us that Nova Scotia will yet produce twice as much and perhaps four times as much fruit before many years. New Brunswick is also planting and on the sloping banks of the St. John River are thousands of acres of young orchard that are not yet producing. Quebec is also forging to the front once more and many acres of Fameuse and McIntosh Reds are found there producing an apple of superb quality and appearance.

In some districts of Ontario the plantings have greatly increased, while in others San José scale has wiped the orchards out of existence. Nevertheless the fact remains that one-half of our 10,000,000 apple trees are not yet bearing.

In British Columbia, I travelled hour by hour through solid orchards, kept in a state of perfection seldom seen in Onatrio. It is true that they are producing only some 1,000 carloads of apples this season, yet it is only the beginning as two-thirds of the trees are under five years of age and the other third practically only beginning to bear. The North-West states of Washington, Oregon and Idaho are in like position, producing now some 15,000 cars.

It is time for us to take stock of the future in the growing of fruit to see where we stand. I am of opinion that, unless we can greatly increase consumption, there are enough fruit trees planted in Canada to supply its needs for many years to come. Let us take care of the trees we have, produce the finest grade we can, and I believe there is a fair return assured under normal conditions.

My advice is to curtail planting until such time as the consumption of fruit increases to meet the plantings of the present day. If we are going

to have two or three times as much fruit in the next ten or fifteen years as we have at the present time, it is going to take no prophet to tell the final outcome.

I believe that the fruit growers of Canada are now roused to the necessity of caring for their orchards in a way never undertaken before. Commercial orchards everywhere are being given scientific treatment which was never practised in the past, and the large orchards, planted as a commercial venture, should continue to receive proper treatment until their fruits are placed on the market.

A more important question than that of production is now before us—that of marketing. Up to the present time very little has been done in this particular line. It is true that the late Mr. McNeill did perform a most valuable work for the fruit growers of Canada in preaching co-operation from one end of the Dominion to the other. The result of his mission has been the organization of large co-operative associations, scattered throughout the various provinces, which have long ago justified their existence. As a member of one of these associations I can testify that many a man has been made rich through his orchard, the products of which in former years went to enrich the dealers. To-day market conditions are such that much fruit is left unharvested, yet the co-operative associations are in most cases receiving a fair return for their fruit. This, to my mind, is the first and most important step in marketing, the organization of the producers. Now the time has come for these associations to go a step further, that is, to proclaim to the world the quality of their fruit, or in other words to advertise.

CROP REPORTING FOR 1915.

BY F. H. GRINDLEY, B.S.A., ASSISTANT TO THE COMMISSIONER.

DURING the coming year it is the intention of the Fruit Commissioner to keep fruit growers, and other interested parties, fully informed as to the condition of the various crops, the state of the home and foreign markets, prices, and so on. This information will be received in Ottawa by telegram at regular and frequent intervals between May and December. Probably two of these "Telegraphic Reports" will be prepared every week, sent at once by wire to the Associated Press, and by mail to all co-operative associations, large growers and dealers, in fact to anyone who applies for them. There will also be

published, once a month, a more lengthy report which will include a summary of all telegraphic reports published during the preceding month and, in addition, information which will be received from reliable growers in all the fruit producing provinces. This latter report will also be widely distributed, mainly to those who are not receiving the telegraphic reports.

As the Fruit Commissioner desires these reports to reach as many interested parties as possible, anyone desiring them is asked to send his name and address at once to "The Fruit Commissioner, Ottawa, Ont."

THE SEED BRANCH.

BETTER SEED AND PRODUCTION.

BY E. D. EDDY, B.S.A., CHIEF SEED INSPECTOR, OTTAWA.

IN order that the desired increased grain production in Canada may be realized to the fullest possible extent this year, it is essential that the selection and preparation of seed be given careful attention. Unfortunately, the importance of good clean seed in relation to the yield and quality of crops harvested is not generally appreciated. On the contrary, the value of Canada's grain crops is enormously lower each year through poor seed.

The grain used for seed is seldom cleaned or graded except to be passed through a fanning-mill once or twice. Often not even this is done, and in many cases the mills used are not equipped with the proper screens and but little improvement is effected. As a result, weed seeds are sown with a large proportion of the seed grain in such variety and numbers as to ensure strong weed growth

and thereby preclude the possibility of producing reasonably clean crops with maximum yields and highest quality. Very little attention is paid to sowing the most suitable varieties or to the sources of seed supply. Much preventable loss is sustained through failure to treat seed for the prevention of smut. In many cases, especially with oats, the yield is greatly reduced by sowing seed weak in vitality through frost injury or failure to remove the small immature kernels by thorough screening.

These unfortunate conditions are shown to exist to a surprising extent by an enquiry which was conducted by the Seed Branch. In the spring of 1913, seed inspectors collected 978 samples of oats, 506 of spring wheat and 408 of barley representing as accurately as possible the average quality of the seed grain used by the

farmers throughout Canada. These were forwarded to the seed laboratory at Ottawa with information about the lots of seed represented in regard to variety, sources of supply, rates of seeding, treatment for smut prevention, cleaning and selection. From the analysis of these samples and the compilation of other information secured, some results not highly creditable to Canadian agriculture are shown. The following is a summary of the outstanding features:—

INEFFICIENT CLEANING.

The lack of attention to properly preparing seed grain is shown by the fact that about 11 per cent of the samples of wheat, oats and barley collected represented seed which was being sown with no cleaning whatever after coming from the thresher. Considerably less than one per cent received any hand-selection. The other lots were reported as being cleaned with a fanning-mill, but in most cases the grain was only put once through a badly equipped mill and but little improvement effected. One sample of oats reported as cleaned with a fanning-mill contained over 5,000 weed seeds per pound, mostly wild mustard. Another contained over 7,000 per pound, mostly spurrey. These seeds could have been almost completely removed by a mill equipped with proper screens and well operated. There were many other instances illustrating the very general lack of appreciation of the importance of cleaning seed and of equipment for doing it.

To secure the best possible sample for seed, most grain should be reduced in bulk from one-third to one-half by thorough cleaning and grading. The grain used for seed in Canada that is cleaned at all is seldom put through a fanning-mill more than once or twice, and usually the mill is not equipped to do good work. Many of the mills in use have only a few screens and riddles designed for cleaning grain for market and are

entirely unsuited for properly preparing seed. More attention to cleaning with a small investment in suitable screens would greatly increase the prospect for increased production next season.

WEED SEEDS SOWN WITH GRAIN.

The extent to which weeds are sown with seed grain through lack of cleaning is shown by the tests of the samples analysed.

Oats: Of the oat samples collected 56 per cent contained seeds of weeds classed as noxious under the Seed Control Act, the average number per pound being 76 and the highest 4,838. The sample containing the largest number was from a home-grown lot which had been run through a fanning-mill in preparation for seeding. The efficiency of the cleaning may be judged from the fact that the oats contained 4,800 wild mustard seeds and 38 Canada thistle seed per pound. They were sown at the rate of two bushels per acre which would put over 2,000 noxious weed seeds per square rod on the land. The most prevalent noxious weed seed in oats was wild oats which occurred in 347 out of the 978 samples at the average rate of 83 per pound. Next in order was ball mustard, occurring in 120 samples at the average rate of 53 per pound and third, wild mustard in 93 samples at the average rate of 209 per pound.

Weed seeds other than those classed as noxious were found in 88 per cent of the oat samples, the largest number being 6,954 per pound and the average 239. The sample containing the largest number was also from a so-called cleaned lot which had been passed through a fanning-mill. The most prevalent weed seed other than those classed as noxious in oats was black bindweed or wild buckwheat which occurred in 678 samples at the average rate of 116 per pound. Lamb's quarters was next, occurring in 354 samples at the average rate of 100 per pound

and lady's thumb third, occurring in 141 samples at the average rate of 43 per pound.

With the weed seed content shown and the rate of seeding reported, weed seeds would be placed on the land seeded to oats at the average rate of 44 noxious and 138 other sorts per square rod.

Spring Wheat: Of the samples of spring wheat collected, 54 per cent contained noxious weed seeds, the average being 79 per pound. One sample contained 11,528 noxious weed seeds per pound, mostly wild mustard. This represented a lot which was being sown without cleaning and at the rate of seeding reported noxious weed seeds would be placed on the land with the wheat at the rate of 8,600 per square rod. The most prevalent noxious weed seeds in wheat were: purple cockle in 127 out of 506 samples at the average rate of 27 per pound; wild oats in 118 samples, 25 per pound; ball mustard in 57 samples, 55 per pound; wild mustard in 52 samples, 358 per pound.

Weed seeds other than those classed as noxious were found in 90 per cent of the samples, the average being 343 per pound. One sample representing a lot which was being sown without cleaning contained 17,415 per pound and also 153 noxious sorts. This seed was sown at the rate of $1\frac{1}{2}$ bushels per acre which would put about 9,800 weed seeds on each square rod. The order of prevalence was the same as with oats.

With the weed seed content shown and the rate of seeding reported, weed seeds would be placed on the land sown with spring wheat at the average rate of 50 noxious and 220 other sorts per square rod.

Barley: With barley the noxious weed seed content was considerably lower than with oats or wheat although the number of other weed seeds was higher. Fifty-seven per cent of the samples contained

noxious weed seeds, the average number being 53 per pound. One sample contained 2,539 noxious weed seeds per pound mostly ball mustard and also 2,268 other kinds.

Weed seeds other than those classed as noxious were found in 86 per cent of the samples, the average per pound being 445 and the highest in any sample 9,968. The order of prevalence with both noxious and other weed seeds was the same as with oats.

With the weed seed content shown and rate of seeding reported, weed seeds would be placed on the land seeded to barley at the average rate of 32 noxious and 270 other sorts per square rod.

SOURCES OF SUPPLY.

Of the lots of seed oats, spring wheat and barley on which information was obtained in regard to sources of supply, 80 per cent were home-grown, 13 per cent secured from other farmers and 7 per cent from dealers. The proportion of farmers who secured their seed from dealers was largest in Quebec, Nova Scotia and New Brunswick. In Quebec the proportion of seed wheat from dealers was especially large. Its quality is indicated by the impurities in the wheat sampled in Quebec which contained on the average over five times as many noxious weed seeds per pound as that from any other province.

Most of the grain purchased from dealers and used as seed in the eastern provinces comes from Western Canada. As a rule, it is ordinary commercial grain that has had no special cleaning or selection. It almost invariably contains large numbers of weed seeds and the vitality of oats is often injured by frost. The practice of openly selling this grain as seed has been largely checked through the enforcement of the Seed Control Act but it is still disposed of in large quantities on sample or under commercial grades

without being definitely represented as seed. In this way the dealers protect themselves against legal responsibility and the farmer who buys this grain and uses it for seed does so at his own risk, and usually with disappointing results. If farmers feel that they cannot afford to pay more than commercial grain prices for seed, they should at least take the precaution to clean it thoroughly and in the case of oats test the vitality.

The seed grain supplied by reliable seed houses is usually well cleaned and of good quality.

VARIETIES.

It has been repeatedly demonstrated that certain varieties of grain give the best returns in particular districts. The lack of attention to the selection of the most suitable varieties is shown by the fact that over 40 per cent of the farmers from whom samples of seed oats, wheat and barley were collected did not know the variety names of the grain they were growing. Information could be secured by any farmer from the nearest experimental farm in regard to the best varieties to sow under stated soil and climatic conditions.

TREATMENT FOR SMUT PREVENTION.

Slightly over 50 per cent of the samples of oats and spring wheat represent lots of seed which were being treated for smut prevention. In the Prairie Provinces 90 per cent of the wheat was being treated and 70 per cent of the oats. In Ontario only six samples of oats out of 164 collected represented lots that were being treated. In Quebec there were none. In neither Ontario or Quebec were any samples collected from wheat being treated. The proportion of oats and wheat treated was also low in the Maritime Provinces, although larger than in Ontario and Quebec. Throughout Eastern Canada the loss through smut is quite heavy, especially in some districts,

and the value of the crops would be considerably increased if treatment for its prevention were more generally practised.

In 88 per cent of the cases where the method of treatment was specified, formalin was used in preference to bluestone.

GERMINATION.

Germination tests of samples collected indicate that on the whole the vitality of the seed used was fairly good, although a considerable proportion of the lots must have given disappointing returns through failure to produce a full stand. Among the most common causes of low vitality in seed grain are frost before ripening, immaturity, weathering and heating. The germination strength of grain is often greatly lowered by the presence of small, immature and shrunken kernels which produce weak plants or none at all if seeding conditions are unfavourable to growth. Such kernels are especially prevalent in oats. All grain intended for seed should be thoroughly screened and graded to retain only the strong, plump kernels. If there is any question of the vitality being injured, a germination test should be made.

INCREASED PRODUCTION POSSIBLE.

When collecting the samples on which the foregoing figures are based, every effort was made to secure seed which would fairly represent what was being used under average farm practice. However, it is recognized that unintentionally the inspectors may have secured extreme rather than representative samples in some instances. Occasionally samples were taken from lots which were yet to be passed through a fanning-mill before sowing, consequently, the figures given in regard to weed seeds in the grain sown are inaccurate to the extent to which these impurities were removed from the lots which were cleaned after being sampled.

But comparison of uncleaned samples with those that had been put through a fanning-mill indicates that the general result is not greatly affected by this, as in most cases little improvement was accomplished by the attempt at cleaning.

After liberal allowance is made for all such inaccuracies, it is clear that much could be done toward increasing grain production by more attention being given to the selection and preparation of seed. It is impossible to state definitely what increase could be realized if the means at hand or easily obtainable were used to the fullest extent toward securing better

seed grain, but, in view of the conditions shown to exist, five per cent increase would seem to be a conservative estimate. On the basis of the yields given by the Census and Statistics Branch of the Department of Trade and Commerce and export valuations, Canada's 1913 crop of grain and flax, exclusive of corn, was worth over \$485,000,000. An increase of five per cent would have added over \$24,000,000 to the value of the crop. This year, with the increased area which will be seeded and the probability of higher prices, there are even greater possibilities.

THE LIVE STOCK BRANCH.

NOTES FROM THE POULTRY DIVISION.

BY W. A. BROWN, B.S.A., M.S.

THE activities of the Poultry Division, with regard to Egg Improvement, have been directed towards interesting the three main classes primarily concerned in the trade, the producers, the wholesale dealers, and the consumers, in the question of quality in eggs. The work was first systematically undertaken in the spring of 1913. Good progress was made during that year, but the most consistent effort was put forth in 1914.

The most important advances have been made to the wholesale trade, for the reason that early in the work it was recognized that the case-count system of buying eggs constituted a distinct injustice to the progressive producer. It was further evident that the wholesale trade who graded the eggs and knew the quality had at their disposal a most effective means for improvement; namely, the making of a difference in price, not only between the prices paid for good and bad eggs, but also between the prices paid for the various grades of good

eggs. Recommendations were, therefore, made to the trade, with the view of inaugurating a system of 'quality payment' which would ensure to the producer, who took pains to market a high grade of eggs, a premium commensurate with the extra time and effort put forth.

As was expected, such a radical change in business methods met with considerable opposition at first. The chief difficulty encountered, however, was the lack of definite standards for grading eggs. Some firms, which had made a special study of the subject, have from the commencement of the campaign, based their quotations on the system of grading followed in the general conduct of their business, but the trade as a whole, throughout Canada, owing to lack of standards, have, to date, adopted 'quality payment' only to the extent of purchasing eggs on a 'loss off' basis, i.e., nothing is allowed for the bad eggs, and the eggs unfit for use.

As noted in THE AGRICULTURAL GAZETTE, for August, No. 7, Vol. 1,

1914, the trade in the provinces of Alberta, Ontario, and Quebec have been particularly responsive to the advances made in this connection, and, further, a number of firms in Calgary, Edmonton, Toronto, and Montreal have regularly based their quotations on a graded basis.

The progress has been not so great in Manitoba, Saskatchewan, and the Maritime Provinces, owing to the fact that the eggs are largely handled by wholesale grocers who are mainly interested in the egg business as a convenient means of collection. It has been supported, however, in those provinces, by all the firms who make a practice of candling their eggs.

It also became evident during the summer of 1913 that before the advances mentioned above could be made effective throughout the Dominion, a strenuous educational campaign leading to an improvement in candling and grading was necessary.

The art of candling eggs is not difficult, but, upon investigation, it was surprising to learn that few country merchants and local egg buyers were conversant with this system of grading. In fact, owing to the facility with which bad and partially incubated eggs may be detected when passed before a light in a darkened room, special attention has been directed towards interesting consumers more generally in the art of candling. During 1914 special efforts have been put forth to interest consumers and the trade generally in this matter. It has been taken up from four different standpoints:

First: The distribution of pamphlets on the subject of egg candling.

Second: The free distribution of simple, convenient, inexpensive cardboard egg candling appliances.

Third: The giving of Candling Demonstrations at fairs and meetings, and through the medium of a Demonstration Car.

Fourth: The establishment of Candling Stations in centres where

co-operative associations have been formed.

Every province, and practically every large town and city in the Dominion has been visited. The work is still going on, and it has been surprising the interest that has been displayed, not only on the part of consumers and producers, but also on the part of the wholesale and retail trade as well.

At the majority of the fairs, and on the Demonstration Car which made some 85 stops on the main lines of the Canadian Pacific and the Intercolonial Railways in the provinces of Ontario, Quebec, New Brunswick and Nova Scotia, the Candling Demonstration has been accompanied by an Egg Exhibit which graphically illustrated, by means of models, cross-sections, and otherwise, the right and wrong methods of marketing eggs.

During the year 1914, 130,000 copies of Pamphlet No. 3, of the Poultry Division of the Live Stock Branch, entitled, "The Candling of Eggs" and 100,000 Candling Appliances have been distributed upon request, and over 150,000 people, the majority of them adults and heads of families, have been given an opportunity to actually view the candling of eggs in the candling booths used in connection with these demonstrations.

The following is a brief statement of the approximate number of people who have actually attended the candling demonstrations at the points mentioned:

Western Fairs.....	45,000
Miscellaneous Eastern Fairs, including the Canadian National....	76,000
Demonstration Car, points on lines of the Canadian Pacific Railway	24,000
Demonstration Car, points on Intercolonial Railway.....	7,500
Total.....	152,500

It is impossible to judge accurately at present, the full benefits accruing from this work. From the marked interest apparent in the work as a

whole, the surprise expressed at the comparative simplicity of the test, and the fact that so many people are to-day actually using the Candling Appliances in their everyday work, it is safe to say that unquestionably the instruction given in this way will have a potent and far-reaching effect upon the improvement of the Canadian egg trade. Three years ago, it would be difficult to find a country merchant that made a practice of candling eggs; to-day, it is the rule rather than the exception.

During the past year, consistent effort has also been directed towards arriving at standards which would be suitable for adoption in connection with the campaign for 'quality payment.' Prof. W. R. Graham, of the Ontario Agricultural College, a member of the International Committee on Market Poultry and Egg Standards, appointed by the American Poultry Association, and National Poultry, Butter and Egg Association, has also been giving this matter his serious consideration. It is of special interest, therefore, to be able to announce at this time, that at the Third Annual Convention of the Canadian Produce Association, held at the Ontario Agricultural College, Guelph, on the 11th and 12th of January last, standards for Canadian

eggs were adopted. A copy of these standards, together with the definition of each Grade is appended hereto.

It also may be of interest to some to learn that in connection with the development of standards a strong feeling has been growing, not only on the part of interested producers and consumers, but also on the part of many distributors in favour of Egg Trade Legislation, similar in nature to the Fruit Marks Act. This matter has a special signification at the present time, owing to the fact that, following the unprecedented growth of the poultry industry in recent years, Canada is gradually changing from an importing to an exporting country insofar as eggs are concerned.

While no special reference has been made in this article to the part which this Branch is taking in the encouragement of producers to improve the quality of eggs, it has previously been pointed out that the efforts put forth in this direction have been directed specially towards the encouragement of co-operative marketing. Complete statistics with regard to the progress made along this line are now being prepared, and a detailed report will be given in these columns at an early date.

STANDARDS FOR CANADIAN EGGS.

THE standards for Canadian eggs as adopted by the Canadian Produce Association at the third annual convention, held in Guelph, January 11th and 12th, 1915, are as follows:—

CLASSES AND GRADES.

Classes:	Fresh Gathered.	Storage.	Cracked and Dirties.
Grades:	Specials. Extras. No. 1's. No. 2's.	Extras. No. 1's. No. 2's.	No. 1's. No. 2's.

Allowance for deterioration in transit 10 per cent, i.e., eggs should grade at point of delivery 90 per cent of grade named at point of shipment.

DEFINITIONS OF GRADES.

Specials.—Eggs of uniform size weighing over 24 ounces to the dozen or over 45 pounds net to the 30 dozen case, absolutely clean, strong and sound in shell; air cell small, not over 3/16 of an inch in depth* (measure from top of cell to outer rim); white of egg to be firm and

clear and yolk dimly visible, free from blood clots.

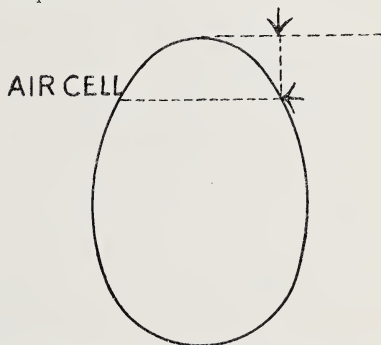
Extras:—Eggs of good size, weighing at least 24 ounces to the dozen or 45 pounds net to the 30 dozen case; clean, sound in shell; air cell less than $\frac{3}{8}$ inch in depth* (measure from top of cell to outer rim) white of egg to be firm and yolk only slightly visible.

No. 1's:—Eggs weighing at least 23 ounces to the dozen or 43 pounds net to the 30 dozen case, clear; sound in shell; air cell less than $\frac{1}{2}$ inch in depth* (measured from top of cell to outer rim) white of egg to be reasonably firm; yolk may be quite visible but mobile; not stuck to the shell or seriously out of place, air cell not necessarily stationary.

No. 2's:—Eggs clean; sound in shell; may contain weak watery

eggs, and eggs with heavy yolks and all other eggs sound in shell and fit for food.

*To measure accurately the depth of the air cell, the following method should be adopted.



Measure from the points that the arrows indicate.

THE CANADIAN EGG TRADE.

The following tables are taken from Pamphlet No. 7 of the Live Stock Branch, "The Egg and Poultry Situation," that is now in press.

RELATION OF CONSUMPTION TO PRODUCTION IN THE CANADIAN EGG TRADE.

	Census of 1891.	Census of 1901.	Census of 1911.
Population of Canada	4,833,239	5,371,315	7,204,838
Poultry population of Canada.	12,696,701	16,562,084	29,548,723
Total egg production	*64,499,241 doz.	84,132,802 doz.	123,071,034 doz.
Exports of eggs.	8,002,935 "	11,363,064 "	92,164 "
Imports of eggs.	602,533 "	951,745 "	2,378,640 "
Total consumption	57,078,839 "	73,723,483 "	123,357,510 "
Average per capita.	11.8 "	13.72 "	17.39 "

*Estimated.

CANADA'S EXPORTS AND IMPORTS OF EGGS.

	Exports.	Imports.
1912.	203,231	7,577,826
1913.	126,854	13,240,111
1914.	124,002	11,274,108

THE HEALTH OF ANIMALS BRANCH.

FOOT AND MOUTH DISEASE.

BY F. TORRANCE, B.A., D.V.S., VETERINARY DIRECTOR GENERAL.

OUTBREAKS of this disease have occurred at various times and places, where the infection has been apparently carried by wild birds. In Great Britain and in Denmark, such birds as gulls, crows and rooks have been thought guilty of bringing the disease from distant sources.

The spring migration of birds to the north has now begun. Robins have already made their appearance in some parts of Canada, a month earlier than usual, and other birds may be expected to follow from time to time. Migrating birds are known to fly great distances, and it is quite possible for them to carry on their feet the contagion of foot and mouth disease.

Some lonely, isolated farm, remote from a railway or probable source of infection, might thus become the starting point of an outbreak. Without wishing to cause alarm, I desire to call the attention of the farming community to these facts, so that everyone will be on the alert, and send prompt information of anything suspicious that may be observed. The symptoms to be looked for are as follows:—

“In the early stages of the disease the animal is lame and frequently smacks its lips, and shows by the movement of its tongue that the mouth is the seat of suffering; and the saliva flows freely from the mouth. An examination of the

mouth shows the existence of vesicles on the tongue and on the inner part of the upper lip and on the pad. These vesicles show themselves in the form of a tough white skin which can be easily stripped off, and a red, raw surface is found beneath. The animal seldom refuses food, but rolls it about in its mouth, and often drops it instead of swallowing it. In most instances the feet are affected as well as the mouth, and blisters will form between the toes and on the heels between hair and hoof, causing the animal to walk tenderly, and frequently to catch up one foot after the other and shake it as if to dislodge something which was producing pain. In milch cows the teats may be affected with vesicles, especially at the opening of the milk duct. This often leads to sores and crusts being formed, which prevent the ready flow of the milk. The disease frequently exists simultaneously among the cattle, sheep and pigs of the farm.”

Any owner of an animal presenting any of the above symptoms should immediately notify the Health of Animals Branch, Ottawa, and the nearest veterinary inspector.

The disease has not yet been found in Canada, and we hope to keep it out, but until the infection in the United States is eradicated, we must exercise the greatest care and take every precaution.

On page 162 of the February GAZETTE, the date of the appointment of Prof. S. B. McCready as Director of Elementary Agricultural Education in Ontario, was given as 1912, this should have been 1911.

PART II.

Provincial Departments of Agriculture.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF AGRICULTURE INCLUDING
AGRICULTURAL COLLEGES.

DEMONSTRATION ORCHARD WORK.

PRINCE EDWARD ISLAND.

BY THEODORE ROSS, SECRETARY FOR AGRICULTURE.

ON the last day of the Short Course in Agriculture the Commissioner of Agriculture proposed to carry on definite extension work with those who would agree to co-operate with us to the extent of carrying on definite extension work under the direction of the Department of Agriculture. About thirty farmers from different parts of the province have already sent in their names, and the Commissioner proposes that our demonstration orchard work should be carried on in a similar way.

We have now a Fruit Growers' Association formed, and all who are ready to take advantage of the extension work in horticulture will be asked to join this Association; a meeting will then be held and certain definite lines of work will be decided upon. This, however, cannot be done until later in the winter. This matter will be brought before the farmers who are present at the Seed Fairs in February and March, and at various meetings held from time to time.

BY L. TENNANT, B.S.A., DISTRICT REPRESENTATIVE FOR KINGS COUNTY.

THE grant made to Prince Edward Island under THE AGRICULTURAL INSTRUCTION ACT has enabled the local Department of Agriculture to do considerable demonstration work along horticultural lines. This work included pruning, spraying, grafting, instruction in the general care and cultivation of orchards, and demonstration in the grading and packing of apples. Many of the Island orchards were set out some years ago and in several instances these orchards have become

unprofitable either on account of lack of care or the fact that many of the trees are of poor varieties. So that the question of the renovation of the orchards of the Island is an important one.

Many orchard owners have rather hazy ideas regarding the pruning of an apple tree. Too frequently they measure the success of their operations by the quantity of wood which is removed from the tree. Now the object of pruning is not to cut out a large amount of wood but to leave

as much bearing wood as possible, to have this wood evenly distributed throughout the different parts of the tree and to give each branch and twig sufficient light and air so that the fruit it bears will mature and colour

trees in many orchards are either early varieties, or varieties that do not find a ready sale. By changing these trees over to varieties that are in demand and that will keep well, the returns from a large number of



MODEL ORCHARD AT LOWER MONTAGUE, P.E.I.

properly. In our work here the cutting out of large branches was avoided as far as possible. The pruning largely consisted in thinning the outer twigs and branches. In some cases where the trees had been neglected for some time it was found necessary to remove large branches, but wherever this was done the cut was made as close to the main limb as possible and the wound was covered with a good paint.

Here and there were found trees that would be very liable to split in a high wind, or when carrying a heavy load of fruit. To prevent this the main branches on opposite sides of the tree were tied together. Screw eyes were placed in these branches between two and three feet from the crotch. These screw eyes were joined together by a loop of heavy galvanized wire which was twisted tight. By this means the tree was supported and the danger of splitting avoided.

A small amount of grafting was done in a couple of orchards. There are several instances in which top grafting could be done quite profitably. A considerable number of

orchards would be materially increased.

Demonstration work in spraying



METHOD OF SUPPORTING TREES AND PREVENTION OF SPLITTING.

was done in several localities last year and was attended with good results. Home made concentrated lime-sulphur and arsenate of lead were the materials used. The orchards on the Island were all fairly free from insect attack last year so that there was not much difference in this respect between sprayed and unsprayed orchards. In a few unsprayed orchards the Oyster Shell Bark Louse is quite bad. In the control of scab, however, there was a big difference between the sprayed and unsprayed orchard. In the sprayed orchard a large percentage of the fruit was No. 1, but in the unsprayed orchard the bulk of the fruit that was marketed was of No. 2 grade and the percentage of culls often ran as high as 35 to 40. A large quantity of home made concentrated lime sulphur was manufactured at Charlottetown and sold to those wanting it at cost.

In the demonstration work in pruning and spraying I had the assistance of four young men who had some previous training and instruction along agricultural lines, either

at Charlottetown or Truro.

The photographs accompanying this article were taken in the orchard of Mr. George Annear, Lower Montague, whose father was one of the pioneers in horticulture on the Island.



WEALTHY APPLE TREE.

This tree in the orchard of John Annear, Lower Montague, P.E.I., produced $2\frac{3}{4}$ bushels of No. 1 apples last autumn after being out five years.

NOVA SCOTIA.

BY P. J. SHAW, B.A., PROVINCIAL HORTICULTURIST.

TWO kinds of orchard demonstration work are carried on in Nova Scotia by the Department of Agriculture. One is in connection with the model orchards of the province and the other with the renovation of bearing orchards.

MODEL ORCHARDS.

The model orchards were planted and are cared for under the direction of the Department of Agriculture. The first two of these orchards were planted in 1901 and in succeeding years the number has been added to until there are now 36 in the province. The regulations governing the act establishing these orchards

allow two or three to a county. They are, therefore, pretty evenly distributed over the province, except that there are none in the fruit district proper.

One object of the work with these orchards is to discover the sections of the province in which the fruit growing industry can be profitably developed. It is also the aim to find out what varieties of fruit are best suited to the different localities and to give a demonstration of the best methods of planting and caring for a young orchard. Each orchard is from one to two acres in extent. The oldest this year produced 67 barrels of apples.

RENOVATION ORCHARDS.

Two years ago a fund became available from THE AGRICULTURAL AID ACT grant for the purpose of orchard demonstration. In the fall of 1913 seven orchards of bearing age were selected in different parts of the province to show what could be done by approved methods of treatment. Two of these orchards are in Lunenburg county, one in Yarmouth county, two in Cumberland county and one in Inverness county, one in Annapolis county. All except the last are outside of the fruit district.

The Department of Agriculture agrees to furnish spraying apparatus, spray materials, fertilizers and cover crop seed sufficient for the needs of a demonstration orchard of two acres, more or less, as an object lesson to encourage horticulture in that section of the county. It is also agreed that full instructions shall be given from year to year by the provincial horticulturist as to pruning, spraying, cultivating and fertilizing and all other matters pertaining to the care of a demonstration orchard. In consideration of this the owner agrees to allow his orchard to be used for demonstration purposes, and to perform all the necessary labour, according to direction, in cultivating, pruning, spraying and fertilizing the orchard. The agreement is binding for a period of five years, the fruitage of the orchard being the property of the owner.

A representative of the horticultural division visited each orchard to assist in getting the work under way. The orchards were first pruned, dead, weak, and diseased limbs were removed; the tree tops were thinned to admit air and sunlight and to encourage growth of new wood and increase the size of the fruit. The rough bark was scraped from the trunks and larger limbs to allow caustic spray to reach the oyster shell bark lice and to destroy the hibernating places of the

codling moth. Much of this work was done in the fall of 1913. A number of the orchards were in sod, some were plowed in the fall of 1913, the others as early in the spring of 1914 as possible. They were then harrowed and the harrowing was repeated every ten days until mid-summer, when a cover crop of buckwheat, vetch or clover was sown to help rot the sod and add humus to the soil. Commercial fertilizers in the form of nitrate of soda, acid phosphate and muriate of potash were applied to each orchard at the rate of 200 pounds of nitrate of soda, 500 pounds of acid phosphate and 200 pounds of muriate of potash per acre. By dividing the orchard into plots and applying the fertilizers in different combinations an effort is being made to test the value of the different fertilizers for orchard purposes.

Each orchard was given a dormant spray of lime-sulphur in the spring before the buds opened. The strength used was one gallon of commercial lime-sulphur to nine gallons of water. The trunks, main limbs and branches of the trees were thoroughly covered with the spray to kill any scale insects that might be present and to clean the trees of "moss" or lichens. Later the orchards were sprayed once before the blossoms had opened and again just after the petals had fallen to control the black spot and prevent the attacks of certain insect pests. Had there been any danger of later injury, a fourth and possibly a fifth spray would have been applied. The spray mixture used on the foliage was lime-sulphur, diluted to the summer strength, one to 30, with $2\frac{1}{2}$ pounds of arsenate of lead to 40 gallons of spray mixture.

The orchards during the past season showed an improvement in foliage and general health. The wounds began to heal well and there was a twig growth of twelve inches or more. While marked results in the yield were not to be expected the

first year, some of the owners report the heaviest crop in the history of their orchards.

In one part of the province which is naturally well adapted to apple culture but where the industry has not as yet reached the same stage of development as in the Annapolis Valley, a district representative was sent for a period of six weeks in the fall and again for a similar period in the spring. His work was to make a survey of the orchards in this district, to meet the owners individually in their orchards, to talk over problems of orchard management with

them, showing them how to perform such operations as pruning, grafting, making lime-sulphur, cleaning out of cankers and the treatment of wounds. The full range of the fruit growers' problems was dealt with from the simplest matters pertaining to production to those dealing with co-operation and marketing of fruit. Later, meetings were held at the demonstration orchards where the work of renovation was under way and where the visitors could see what was being done and take part in some of the operations.

NEW BRUNSWICK.

BY A. G. TURNEY, B.S.A., PROVINCIAL HORTICULTURIST.

IN 1911, the Department of Agriculture established demonstration orchards at Lower Coverdale, Albert county; Maugerville, Sunbury county; and Douglas, York county. Additional demonstration orchards were established at Lingley, Kings county, in 1912; at the University of St. Joseph's, Westmoreland county, in 1913; and at Havelock, Kings county, and Randall's Corner, Sunbury county, in 1914.

The general treatment is about as follows:—The trees are heavily pruned, the rough bark scraped off the trunks and main limbs, and wounds resulting from sunscald, canker, etc., are carefully cut back, disinfected and painted. A dormant spray of commercial lime sulphur (1-9) was applied to control the oyster shell scale and remove lichens and other fungous growths. Two, three, and in some cases, four, subsequent sprayings of summer strength are applied, depending upon the local conditions and the nature of the season. Generally, a medium to heavy application of well rotted barn yard manure is applied, and applications of commercial fertilizers

—nitrate of soda, sulphate of potash and basic slag—are scattered broadcast and harrowed in. Clean cultivation is practised until about June 25th when the orchard is then sown to cover-crops, generally to summer vetch, but sometimes to a mixture of mammoth red clover, summer and winter vetches.



GENERAL VIEW OF DEMONSTRATION ORCHARD AT MAUGERVILLE, N.B., SHOWING LARGE SIGN BOARD.

In taking over these orchards the department agrees to operate them for three successive years under the

following conditions:—(1) The complete season's orchard operations to be under the direct superintendence of the provincial horticulturist or appointee of his; (2) The department provides free the services and

provides free suitable spraying materials and appliances; (4) The owner of the orchard agrees to assist or provide assistance in the actual work when requested to do so, and also to provide, at his own expense, such



TREES BEFORE PRUNING IN DEMONSTRATION ORCHARD, MAUGERVILLE, N.B.

expenses involved in the actual work of pruning, spraying and otherwise properly caring for the orchard, except for such work as is performed by the owner of the orchard or his hired man; (3) The department

barnyard manure, commercial fertilizers, horse labour and fruit packages as may be needed; (5) The proceeds from the sale of apples to be the property of the owner, provided however, that the department may



TREES AFTER PRUNING IN DEMONSTRATION ORCHARD, MAUGERVILLE, N.B.

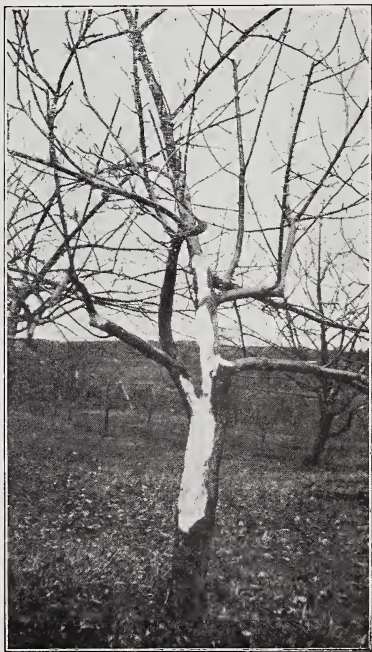
purchase a portion or all of the crop except that which the owner needs for his own use.



UNTREATED SUNSCALD AND CANKER WOUND.

These orchards were selected with special attention to their location so that they are all situated on prominent highways and are therefore quite public. A large sign, about six feet by four, is set up in each orchard calling attention of passers-by to the nature of the work being carried on. Articles concerning the establishment and care of these orchards, and their condition from time to time, are published in the local papers. A spring and fall meeting are generally arranged for each orchard and these are held while the actual work is going on so that the neighbouring farmers may see the pruning and spraying of the trees in the spring and the picking and packing of the fruit in the fall.

The operation of these orchards by the department has demonstrated to their localities the successful renovation of neglected trees and the advantages and profits resulting from the practice of proper pruning, spraying, cultivating and fertilizing. The Maugerville orchard gave a net profit per acre of \$54.33 in 1911, of \$206.55 in 1912 and \$31.75 in 1913, or an average annual net profit per acre for the three years of \$97.54. The Douglas orchard gave a net profit per acre of \$88.56 in 1911, of \$341.76 in 1912, and of \$100.52 in 1913, or an average annual net profit per acre for the three years of \$176.94. The Albert county orchard gave a net profit per acre of \$182.04 in 1911,



TREATED SUNSCALD AND CANKER WOUND.

of \$80.34 in 1912, and of \$104.66 in 1913, or an average annual net profit per acre for the three years of \$122.34.

Below is given a summary of the three years operations in the demonstration orchards at Lower Coverdale Albert county, and Douglas, York county. Full particulars concerning all of our demonstration orchards

with detailed items of expenditure and revenue will be found on pages 51-81 of the Report on Horticulture for 1913,—copy of which will be gladly sent upon application.

SUMMARY.

DEMONSTRATION ORCHARD AT DOUGLAS, YORK COUNTY.

YEAR.	Total Yield.	Yield Per Acre.	Net Profit Per Acre.	Net Profit Per Barrel.	Average Selling Price Per Barrel.	Total Cost of 1 Bbl. Apples, Grown, Packed and Marketed.
1911.....	147 bbls.	98 bbls.	\$ 88.56	\$.90	\$2.43	\$1.53
1912.....	342 "	228 "	341.76	1.50	2.16	.66
1913.....	86 "	57 1/3 "	100.52	1.75	2.90	1.15
The average of the three years gives the following results		127 2/3 "	176.94	1.38 1/3	2.49 2/3	1.11 1/3

DEMONSTRATION ORCHARD AT LOWER CLOVERDALE, ALBERT COUNTY.

YEAR.	Total Yield.	Yield Per Acre.	Net Profit Per Acre.	Net Profit Per Barrel.	Average Selling Price Per Barrel.	Total Cost of 1 Bbl. Apples, Grown, Packed and Marketed.
1911.....	697 bbls.	230.3 bbls.	\$182.04	\$.78	\$1.82	\$1.04
1912.....	280 "	93 1/3 "	80.34	.86	2.51	1.65
1913.....	197 "	65.6 "	104.66	1.59	3.14	1.54
The average of the three years gives the following results		130.4 "	122.34	1.07 1/2	2.49	1.41

QUEBEC.

BY J. H. LAVOIE, ASSOCIATE-CHIEF OF THE FRUIT DIVISION.

SYSTEM.

THE present system was inaugurated in 1898. Recommended at first by the members of the Pomological Society, it was eventually adopted by the Department of Agriculture and modified from time to time in accordance with the requirements of the various sections of the province.

When this system was decided upon, most of the orchards were composed largely of old trees, generally neglected and seldom pruned or sprayed. Consequently, the yield was poor and the fruit of inferior quality.

This situation imposed a double task upon the department. In the first place, it had to be demonstrated to the farmers of the eastern part of Quebec that fruit growing could be

made profitable by the use of acclimatized varieties; it had also to be demonstrated to those of the western part of the province that the production could be largely increased and improved by the use of more scientific methods of management. In both cases it was necessary to disseminate information by instruction and demonstration, which the department has endeavoured to do by the most efficient means.

INSTRUCTION.

Information is being given in three different ways:—

1. By wide distribution of publications such as bulletins, circulars and reports.

2. By periodical lectures given at the short courses, organized in the

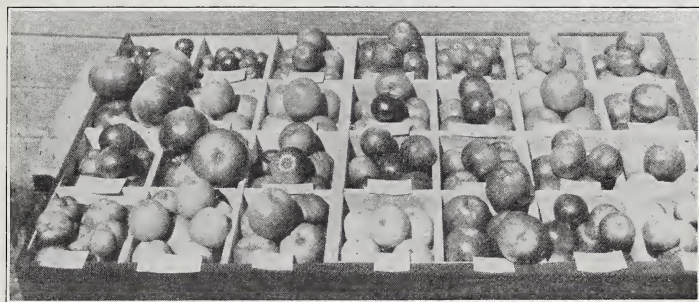
schools of agriculture, or in the chief fruit sections of the province.

3. By series of articles or calendars of monthly operations published in the *Journal of Agriculture* and reproduced by a large number of daily papers.

PRACTICAL DEMONSTRATIONS.

Owing to the fact that there are districts where no fruit growing has been attempted and where it is desired to establish this industry and other districts where the industry already exists but where it must be improved from a purely commercial point of view, the methods

tions are in charge of farmers who desire to grow fruit and who pledge themselves, by contract with the department, for a period of five years, at an annual rental of \$25, to give their whole attention, free of charge, to the scientific management of the orchard established on their land, in order to collect the greatest possible amount of useful data for the fruit growers of their district. At the end of the five-year period, the department keeps 10 per cent of trees and shrubs originating from the scions that have succeeded. It also reserves the right to purchase the fruit of the said orchards in whole or in part for experimental



COLLECTION OF 28 VARIETIES OF APPLES, TAKEN FROM THE FRUIT STATIONS OF STE. FAMILLE, AND ILE-D'ORLEANS, QUE.

must necessarily vary, in accordance with the requirements. The following have been established by the department.

(1) *Experimental Fields*, in charge of good farmers, in districts where the climate is very severe and where several attempts to establish an orchard have already failed. These farmers are supplied with the hardiest varieties, over which a close watch is kept. There are now four of these experimental fields.

(2) *Fruit Stations*, the object of which is to teach the farmers the proper methods for the establishment, the cultivation and the management of an orchard. These sta-

purposes, exhibitions, packing demonstrations at the market price.

There are now 38 of these stations, situated in different parts of the province and they cover a total area of 85 acres. They are equipped with pruning instruments, spraying machines and spraying solutions. There were sent to these stations, this year, 550 lb. of lead arsenate, 185 gallons of lime-sulphur wash and 15 lb. of sulphate of nicotine (blackleaf 40). Some of the stations are drained and all are protected from trespassers by special fences.

(3) *Demonstration Orchards* for teaching scientific methods of cultivation and showing the care with

which the operations should be performed in order to market only first class fruit. These orchards are supposed to serve as models for the fruit growers of each locality. There are now seven of them covering a total area of $33\frac{1}{4}$ acres.



ORCHARD OF MCCOOL BROS., ST. JOSEPH
DU LAC, QUE.

The annual expenditure made by the department in each of these orchards must not exceed the sum of \$500, including the annual rental of \$25 per acre, cost of building fences, cost of fertilizers, spraying solutions or chemicals necessary for the making of the same, leguminous seeds, 800 lb. of chemical fertilizers, 10 tons of farmyard manure per acre, and all necessary implements for the culture and the management of the orchard.

On the other hand, the owner is bound by contract to do all the work in accordance with a special program prepared by the department and which may be summarized as follows: he must, at his own expense, spread the manure, cultivate the soil, plow under leguminous crop, prune the trees, spray at least four times during the season, thin the

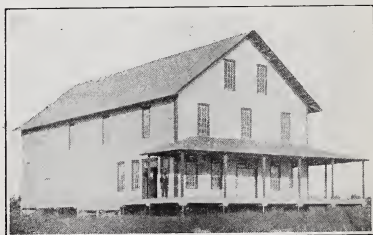
fruit, pick the fruit by hand and pack it—the whole in accordance with the instructions of the superintendent of demonstration orchards.

The owner is entitled to the whole crop of fruit, but the department reserves the right to purchase this crop in whole or in part at the market price. Two of these demonstration orchards are now using grading machines; one of them has a cold storage warehouse and all are equipped with automatic pumps.

RESULTS.

The results so far obtained in these various establishments have been so satisfactory that fruit growing has made progress in the whole province. Not only are the farmers now establishing orchards or renovating those that they have already, but everywhere they are organizing new horticultural societies or co-operative associations in order to improve, increase and market the produce.

In all the horticultural exhibitions held this year a marked improvement could be noticed by comparison with the previous years in the appearance, the grading and the pack-



COLD STORAGE WAREHOUSE AT ROUGE-
MONT, COUNTY OF ROUVILLE,
QUE.

ing of the fruit. In order to facilitate the destruction of insect pests, the Minister offered last year, to the agricultural societies of the provinces the advantage of securing, at exceptionally favourable terms, the spraying material they might need.

Up to the present time the department has paid a part of the cost of the 73 spraying machines purchased by these societies.

Recently a list of questions was sent to these societies as to the quantity and cost of the various kinds of spraying material purchased during the year. Not all the societies have reported as yet but the quantities for those that have reported are as follows: lead arsenate, 12,000 lb. purchased at the average price of

14½ cts. a pound; lime sulphur, 6,793 gallons at 15 cents a gallon; Paris green, 205 lb. at 15½ cents; copper sulphate, 1,188 lb. at ½ cent; spraying pumps, 118 at the average cost of \$14.36 each.

In view of these results and of the exceptional advantages that the province offers for the production of fruit, there are reasons to believe that the province of Quebec will soon become one of the most important fruit growing centres in Canada.

MACDONALD COLLEGE.

BY T. G. BUNTING, B.S.A., PROFESSOR OF HORTICULTURE.

THERE have been a number of demonstration orchards established in the better known fruit sections of this province, which have been under the management of the Department of Agriculture and the Pomological and Fruit Growing Society, and these have been very successful in encouraging the taking of greater interest in the many old orchards of these respective sections.

In recent years there has been a very keen demand for information and instruction in apple growing in some sections where apple growing has not been put on a firm basis. Realizing this the Horticulture Department of Macdonald College has been holding orchard demonstrations in pruning, spraying, grafting, management, etc., of orchards in various districts. These meetings have been held in orchards at the following places:—Ayer's Cliff, North Hatley, Smith's Mills, Rockburn and Shawville, and at other points information has been given from time to time as opportunity occurred. In addition

it has been deemed wise to establish a number of illustration orchards at central points in sections outside of the better known apple districts. At Lennoxville and at Shawville small apple orchards of 50 trees of McIntosh and Fameuse have been planted, and it is the intention to add more varieties to these in the near future and also to establish other plantings of a similar nature elsewhere. Only those varieties that are perfectly hardy and most likely to be satisfactory are being planted. The orchards are intended to be a gathering place for meetings in the future as well as a demonstration of just what may be accomplished in apple growing in these sections.

The two orchards already planted are under the management of the Macdonald College demonstrators located at Shawville and Lennoxville, and both of these orchards have done exceptionally well during the past year. Plans are now being made for the planting of several more orchards in the spring.

ONTARIO.

BY P. W. HODGETTS, B.S.A., DIRECTOR FRUIT BRANCH.

DURING the year 1914 twenty-three demonstration orchards in various parts of the province were conducted by the district representatives of the Ontario Department of Agriculture, under the supervision of the Fruit Branch. These orchards were thoroughly pruned, sprayed and cultivated. The pruning was in most cases done by men specially sent out by the

Hastings, Kent, Lambton, Leeds and Grenville, Middlesex, Ontario, Peel, Prince Edward, Simcoe and Welland. In addition to the above demonstration orchards, many pruning demonstrations were held throughout the fruit districts of the province.

For the coming season it is expected that at least as many orchards as for the past year, will be taken over by the Department of



A SPY TREE IN AN ONTARIO ORCHARD USED IN A PRUNING DEMONSTRATION.

This shows the tree before pruning.

Fruit Branch. The spraying was left almost entirely in the hands of the representative, and the cultivation was done by the owner of the orchards under the direction of the representative.

Demonstration orchards were located in the counties of Brant, Bruce, Dundas, Elgin, Essex, Glengarry,

Agriculture for demonstration purposes. Special experiments in pruning, one of which is to determine what months of the year bearing apple trees can be safely pruned, are also to be conducted and continued. The above experiment in particular has been carried on since September, 1914.

In the demonstration orchard work as usually carried on in the past, the expense of pruning, spraying materials and part of the labour for spraying has been supplied by the department, either directly from the Fruit Branch or by the district representative. The owner of the orchard was required to do the plowing and cultivating, manuring and teaming as required, and to assist with the spraying, etc. The har-

number of years to insure a fairly accurate result. Various spray materials, clean cultivation with cover crops v.s. sod culture, and different fertilizers will be thoroughly tested out on a commercial scale. The harvesting and marketing of the fruit will also be done by the Fruit Branch.

The organization, advertising, etc., of public meetings in conjunction with the work being carried on in



A SPY TREE IN AN ONTARIO ORCHARD USED IN A PRUNING DEMONSTRATION.

This shows the tree after pruning.

vesting and marketing of the crop was entirely in the hands of the owner.

During the last year, however, a new phase of orchard demonstration was undertaken by the Fruit Branch in which three orchards of upwards of four acres each were leased outright for a term of years. In these orchards, demonstrations and experiments in pruning, spraying, cultivation, fertilization, marketing, etc., are to be carried on for a sufficient

the demonstration orchards, is left entirely in the hands of the district representative, the speakers being furnished by the Fruit Branch.

Below is tabulated the financial statement for 1914 of a government demonstration orchard in Dundas County. The orchard in question consisted of about $1\frac{1}{4}$ acres of McIntosh variety. These figures serve to show conclusively how old neglected orchards may be made very profitable indeed.

ORCHARD OF EARNEST FARLINGER, MORRISBURG.

EXPENDITURE.

<i>Cultivation:</i>	
Disking, 1 day man and team...	\$3.50
Cover crop, 1½ bu. grain at 50c.	.75
Sowing cover crop, ¼ day at \$3.50.....	.85
Manure, 12 loads at \$2.00.....	24.00
<i>Pruning:</i>	
20 days at \$2.50 per day.....	50.00
1½ days scraping at \$2.00 per day.....	3.00
1 day painting cuts on trees, etc.	2.50
<i>Spraying:</i>	
4 days at \$2.00 per day for nozzle man.....	8.00
4 days at 3.50 per day for man and team.....	14.00
<i>Thinning:</i>	
5 days at \$2.50 per day.....	12.50
<i>Picking:</i>	
2 men, 5 days at \$2.00 per day...	20.00
<i>Packing and Grading:</i>	
2 men 8 days at \$2.50 per day...	40.00
<i>Cost of Spray Material, four applications:</i>	
84 gals. lime sulphur at 18c.....	15.12
81 lb. arsenate of lead at \$9.00 per cwt.....	7.29
5 lb. Black Leaf 40 at \$1.25.....	6.25
<i>Packages:</i>	
311 apple boxes at 15½c.....	48.20
Wrapping paper, etc.....	17.00
19 bbls. at 45c.....	8.55
50 lb. nails at 3c. per lb.....	1.50
	<hr/>
	\$283.01

RECEIPTS.

3 bbls. No. 1 locally at \$3.00...	\$ 9.00
54 boxes No. 1 Ottawa at \$2.00...	108.00
94 boxes No. 1 Toronto at \$1.25...	117.50
145 boxes No. 1 Montreal at \$1.40...	203.00
20 boxes No. 2 Montreal at \$1.15...	23.00
19 bbls. No. 2 locally at \$2.50...	47.50
81 bus. Windfalls at 50c.....	40.50
33 bus. Windfalls at 25c.....	8.25
	<hr/>
	\$556.75
Expenditure.....	283.01
	<hr/>
Net profit.....	273.74

In the foregoing figures two or three items should be specially noted. The value of the manure to the land will be distributed over a number of years. Similarly the pruning charges are high as the orchard had been neglected for a number of years.

Prices also for McIntosh apples were not so good as usual during 1914. The number of culls too, 114 boxes, is very high, due to a windstorm just before the fruit was ready to pick.

Concerning two demonstration orchards in Middlesex County, Mr. I. B. Whale, the District Representative there, writes as follows:—

"In reply to your letter of January 27th, regarding results in our demonstration orchards, our most marked results were in Mr. Caverhill's orchard, with twenty-five trees of McIntosh Reds. These trees were something over twenty years old, and according to Mr. Caverhill, they had not produced fruit that was marketable, the scab ruining the fruit and destroying the leaves many years. A year ago, I do not think I saw as scabby looking fruit or as small leaves. Mr. Caverhill intended grafting these last spring to other varieties, but after some persuasion he allowed Mr. Kydd of the Fruit Branch, and myself to use them for demonstration work. We gave these trees four sprayings of lime sulphur, using 45 gallons of lime sulphur in all and 55 pounds of arsenate of lead. Figuring the cost of man labour at fifteen cents per hour and horse labour at ten cents per hour, the total cost was \$11.50, besides the pruning. While the scab was bad in other trees of the same variety as well as other varieties, our twenty-five trees produced 38 barrels of apples, 33 of which were No. 1's, the remainder No. 2's, which shows the results which have been obtained in one year, due to pruning and spraying. I might say, that the orchard was cultivated during the summer. It was from no marketable fruit in previous years to about 87 percent No. 1's with the treatment. The twenty-five trees in the old orchard, which were pruned and sprayed were free from fungous diseases and insects of all kinds.

"With Mr. Sadler's orchard of 90 trees, set out 44 years ago, we have his statement that up to two years go, he had never marketed over \$100 worth of fruit in one year, but with the first year's pruning and spraying, the orchard gave \$200 returns. This year with the pruning and spraying, the orchard has returned over \$400 worth of fruit, sold on an open market when prices were dull. Mr. Sadler now counts his orchard the best paying part of his farm, and firmly believes that the returns can be increased one half as much again by fertilizing the orchard and by continued care."

MANITOBA.

BY W. C. MCKILLICAN, B.S.A., SUPERINTENDENT BRANDON EXPERIMENTAL FARM.

SOME of the hardiest varieties of standard apples are being tested at the Brandon Experimental Farm, but the situation does not seem favourable and the results up to the present are not very encouraging. Good results have been obtained with cross-bred varieties originated by the late Dr. Wm. Saunders who was for many

the hope of developing hardy varieties of standard size and quality. Thousands of seedlings of the hardiest standard apples are being grown in nursery rows. At present about 11,000 of these seedlings are under observation at Brandon. It is hoped that greater variation and consequently greater opportunities for selection will be gained by the use



THE ANISETTE APPLE GROWN IN ORCHARD OF A. P. STEVENSON, DUNSTAN, MANITOBA.

years Director of the Experimental Farms. These were produced by crossing standard varieties with (*Pyrus baccata*), a native of Siberia, very hardy but producing small astringent fruit. Some of the hybrids originating from these crosses have proved to be of great value for prairie conditions. Many trees of this type fruit quite abundantly at Brandon each year. The fruit is about the size of an ordinary crab apple and makes delicious preserves and jellies.

A new line of experimental work has been taken up in recent years in

of large numbers. These seedlings will first be rigorously selected for hardiness, then the most hardy will be brought to the fruitage stage, while the nursery rows will be filled again with fresh thousands of seedlings. It is hoped in this way that out of the many thousands of seedlings with the great variations that seedlings show, that a variety may be found that will be hardy under the most rigorous conditions, and yet bear fruit of good size and quality.

PLUMS.

The different varieties of plums



WEALTHY APPLE TREE IN ORCHARD OF A. P. STEVENSON, DUNSTAN,
MANITOBA.

that are recommended for western conditions such as Cheney, Aitken and the numerous varieties originated by Professor Hansen of South Dakota, are being tried at Brandon. These all succeed quite well, but none are quite so satisfactory on the whole as some of the best strains of Manitoba Native plum. One of the best and earliest of the latter has been called the Major plum. Further work is being done in developing and isolating improved strains of the native plum.

BUSH FRUITS.

Currants, gooseberries and raspberries all succeed very well. Experiments are being conducted in testing out the different varieties of bush fruits. Different methods of mulching and winter protection are also being tried.

STRAWBERRIES.

Strawberries have been grown with great success for many years. Experiments with varieties and winter protection are being conducted.

ALBERTA.

BY GEORGE HARCOURT, B.S.A., DEPUTY MINISTER OF AGRICULTURE.

ALBERTA has no orchards or vineyards, or fruit plantations—nothing but possibilities—and they are so full of potentialities that no one can foretell the great things that may come out of these possibilities.

The wild gooseberry, currant and raspberry grow profusely wherever there is shelter, while the wild strawberry is found practically everywhere. In addition to these universally known fruits there is the blueberry, high and low bush cranberry and the saskatoon. The latter is peculiar to the prairies and responds to cultivation readily but the fruit is flat tasting and not held in very high esteem. Where the wild fruit grows it is generally conceded that the tame or cultivated variety will succeed. It may take a little time and numerous experiments to find out just how to attain success, but sooner or later a way will be found.

Small plots of cultivated strawberries are now to be found from one end of the province to the other; while here and there a more enterprising pioneer has quite large sized plots and is placing strawberries on the market.

The black, red and white currants and raspberries are to be found in

hundreds of gardens but have not been grown as yet for sale in any quantity.

So uniformly successful has the effort been to grow all of these fruits that one can safely say now that there is no excuse for any farmer not having all the strawberries, raspberries, currants and gooseberries needed in the farm home. Wind-breaks are necessary and the plants have to be held back in the spring by winter mulching to guard against late spring frosts.

Practically all the varieties of the small fruits that have proven most desirable in Eastern Canada have given best results here also.

Of the larger fruits a less hopeful report must be made. It is said where the wild plum, the pin-cherry and the choke-cherry are to be found the apple, pear and plum will grow. The two varieties of cherry are to be found growing in practically every ravine or coulee where there is a good shelter of trees. This would indicate that where a shelter built of trees is grown it may be possible to grow hardy apples. That there are possibilities in this direction and that these possibilities deserve most careful study is indicated by the fact that there are apple trees grow-

ing and bearing in the province. They are found from the extreme south, as at Medicine Hat and Lethbridge, to north of Edmonton. These trees were purchased from various nurseries and have done well without special protection. Crab-apple trees have been grown at many points in the province and at points hundreds of miles north of Edmonton, and there is thus a possibility that the area capable of growing apples may prove much more extensive than the most sanguine now expects. This is borne out by the fact that young apple trees are promising well at the Dominion Experimental Station at Fort Vermilion on the Peace River in the northern part of the province. The work being done at

the Lethbridge and Lacombe Experimental Stations of the Dominion Government along the line of fruit growing is most valuable as well as highly encouraging. A hardy root stock to graft on seems to be the first essential for which to work.

The provincial government established some nine small experimental fruit stations in 1907. Yearling trees of hardy varieties were planted and at some points met with promising results; while at others the trees were killed every winter. On the establishment of the Demonstration Farms these plots were discontinued, the intention being to make this one of the lines of investigation and demonstration.

BRITISH COLUMBIA.

BY H. THORNBUR, ASSISTANT PROVINCIAL HORTICULTURIST.

OWING to the many and varied conditions met with in British Columbia by the fruit grower, a large amount of demonstrational and experimental work has been found necessary. This work has served a double purpose; first, it advances the industry at a more rapid pace than when left to the observations of the fruit grower, and, second, it prevents many costly mistakes from being made by the fruit growers in their attempts to grow orchards.

While the few pioneer orchards located at various points in the province have been of some value in determining the proper varieties for those districts wherein they are located, they have often served to mislead growers as to the exact value of some of the most important varieties. To-day, many mistakes are being discovered regarding varieties and many of them can be attributed to observations made on the results in these orchards.

Previous to 1900 little authentic information regarding the best vari-

eties for each district had been compiled. There was also a great diversity of opinion regarding the selection of nursery stock; the proper distances for planting; proper methods of pruning; when and how to spray; how to cultivate; and last but not least, practically nothing was known regarding the cost of these various operations. During the past fifteen years, and especially since 1909, much definite information has been collected on these subjects. The origin of the greater portion of this information has been from demonstrations and experiments in old orchards and from the results of the orchards under the supervision of the Government which were called Demonstration Orchards.

These orchards were started in 1911. At the present time there are sixteen and they are located at the following points:—Cowichan, Nanaimo, Hammond, Aldergrove, Lower Nicola, Walhachin, Shuswap, Salmon Arm, Willow Point, Rossland, Birchbrook, Waldo, Windermere, New Denver, Wardner and

Golden. There is also a small-fruit plantation at Chilliwack which is under management similar to the orchards.

The area of each of these orchards is about 5 acres and it is set aside for the use of the Government for 5 years. The owner agrees to clear and fence, to provide and maintain the irrigation system; to bear the cost of cultivation; furnish all necessary implements; keep records of the cost of each operation, and if requested, make reports on the progress of the orchard from time to time.

The Government provides the trees, plants and prunes them, and gives instructions, through the district horticulturist, regarding the care of the orchard; and pays any outside expenses in excess of those necessary for the actual management of the orchard.

At the expiration of the agreement the orchard becomes the property of the owner.

These orchards contain the most suitable varieties for the respective districts. As a rule, fillers are used. Some of these orchards are intercropped with small fruits, potatoes or root crops, while others are cultivated during the summer season and seeded to a cover crop in the fall to aid in ripening the trees and to improve the soil. The pruning is done by the local horticulturist in order to demonstrate different systems and to ensure uniformity.

At various times during the year these orchards are used for demonstration work in spraying, pruning, etc., and the orchard is open to the inspection of the public at all times. The public meetings are arranged through the Farmers' Institute or by the horticulturist in charge. The attendance at these meetings is usually good and much interest is taken by the neighbouring orchardists as well as by the owners.

Other forms of orchard demonstration work are being carried on also. Among these, packing, pruning,

spraying, thinning and fertilizing demonstrations and tests are the most important.

The Apple Packing Schools were inaugurated in 1911, when thirteen were held. This number increased to 30 in 1912 and to 41 in 1913. In 1914 the number of classes decreased to 37, and in 1915 only 25 have been requested to date. This decrease does not indicate a decline in the interest taken in packing but shows that a sufficient number of packers has been produced to handle the bulk of the crop. In 1914 it was estimated that 75 per cent of the crop was packed by pupils of the Government packing schools. The packing schools consist of twelve 3-hour lessons extending over 6 days. The minimum number of pupils is 12 and the maximum number allowed is 16 for each school. A fee of \$2.00 is charged for admission.

These schools have been very successful and have been adopted in parts of Australia and Tasmania as well as in Nova Scotia and Ontario.

Aside from the numerous pruning demonstrations which are held under the direction of the Farmers' Institute in the Demonstration Orchards, and in the orchards of fruit growers at many points in the province, a distinct line of pruning instruction was installed in the spring of 1914. This resulted from the fact that sufficient information regarding pruning could not be given in a single demonstration. These 'Pruning Schools' as they are called, were patterned after the Apple Packing Schools, and are conducted by the assistant horticulturists. Briefly, they consist of ten 3-hour lessons extending over 5 days. A minimum of 8, and a maximum of 12 pupils is allowed for each school. The admission fee is \$1.00 for each student. Last year, 26 pruning schools were held, and this year at the present writing over 55 have been applied for and more applications are coming in every week.

Spraying demonstrations have also

been given at various places in the province. These have been divided into two general classes. First, demonstrations have been given under the auspices of the Farmers' Institute, to show how to mix and apply the sprays; and the value of the different nozzles with various sprays. Second, experiments have been made to test the value of the different sprays. The three sprays mainly under consideration were Lime Sulphur, Soluble Sulphur and Bordeaux. These were used last year for Apple and Pear Scab in orchards at Salmon Arm and Harrop. As high as 97 per cent clean fruit was secured by the proper use of Lime Sulphur. Similar results were secured by Bordeaux but a considerable amount of russetting was noticed which was not present when Lime Sulphur was used.

The Soluble Sulphur gave fair results, but until further tests are made, it cannot be recommended for general use. Other spraying experiments have also been made by the Inspection Branch of the Department of Agriculture, with good results.

One experiment was made in thinning apples. The increase in favour of thinning was between 130 to 150 per cent over the unthinned trees. More experiments in thinning will be conducted in the future and if they give such promising returns as these have in the past it will become a much more general practice.

Fertilizer experiments have also been started but from the nature of these no results will be published for some time yet.

Professor W. R. Reek, B.S.A., has resigned the position of Associate Professor of Animal Husbandry at the Ontario Agricultural College to accept a position on the staff of the Department of Agriculture of Prince Edward Island. Professor Reek will have a general oversight of the extension work of the Island Department of Agriculture and will give special attention to the work being done under the provisions of (THE AGRICULTURAL INSTRUCTION ACT.)

Mr. A. L. McCredie has resigned from the editorship of the "Canadian Countryman" to engage in the growing of a large acreage of flax and the preparation of the fibre, according to a new method, on behalf of one of the largest flax fibre mills of the United Kingdom.

PRINCE EDWARD ISLAND.

HOUSEHOLD SCIENCE SHORT COURSES.

BY MRS. A. E. DUNBRACK, SUPERVISOR OF WOMEN'S INSTITUTE.

SINCE the 4th of January 100 ladies have been admitted to the classes in Home Economics which have been conducted by the Women's Institute Division of the Department of Agriculture for Prince Edward Island. These classes have been held in the Prince of Wales College and have included in their work the following subjects:—Cooking; household administration; table setting and serving; laundry; personal hygiene; sanitation; millinery; home nursing; planning of kitchen garden; planning of school gardens; landscape gardening; dietetics, tuberculosis; arrangement of an efficient kitchen and farm home conveniences and household furnishings.

The above subjects include those with which a woman as a homemaker should be familiar. Economy in the management of household affairs is the keynote of the whole course. The student learns how to save materials, time and labour. By means of lectures she is taught why certain things and certain methods are better than others. Then by actually doing the work, she applies the knowledge gained in the lecture room to practical cookery, sewing, millinery, home nursing, laundry, table setting, etc. It is a practical course which trains the hand as well as the intellect. It offers the kind of knowledge which a woman can apply in her everyday housework and her everyday relations to the farm.

In the lectures on hygiene and sanitation the subject is dealt with in regard to the effect of the air we breathe, the water we drink and the

house in which we live, upon our physical health. This course aims to bring out the close relation which exists between disease and such simple factors in our everyday life as fresh air, proper care of the body, furnishing of the home so it does not harbour dust, etc. This is an age of preventive medicine. Let us learn how to keep well. The course in millinery aims to teach the women how to make, trim and retrim their own hats. It includes the designing and drafting of patterns for hats; construction of frames of buckram and wire; covering and refinishing with velvets, nets and making and placing of trimming, as well as the instruction in ribbon and silk flower-making. All of these are applied to the making of hats from original designs. The laundry work includes the application of science to practical laundering, such as may be worked out by the study of blueings, starches and soaps, with the effects of each on the different fabrics. A comparative study of the different brands of the above mentioned necessities is made and their relative values for the different purposes estimated. Laundry equipment is investigated with the idea of providing that which will enable the work to be done with the least expenditure of labour and money. The practical work in the home nursing course includes the making of beds, bandaging and poultice-making. In considering the first care of the patient, the topics discussed are:—choice and preparation of the sick-room, care of the patient, bathing of patient, making of patients' bed and the importance of

carrying out the doctor's orders implicitly. Next, as so many diseases are transmissible, the prevention of further contagion is considered, isolation of patient, disinfection of anything removed from the room, and the care of the room after recovery of the patient. In Dr. Garrison's lectures on Tuberculosis special attention is given to the care of the patient during the disease in which the nursing is such an important factor.

A course in Dietetics and Invalid Cookery is also given as well as a practical course of several lessons in plain cookery. The subject of home furnishings deals with comfort, simplicity and beauty and the essentials of a well furnished home. It is not a question of money but of knowledge and an understanding of line, proportion and colour, the

laws that govern all ornamentation. In the arrangement of the efficient kitchen the lecturer brings out the importance of having the furnishings and utensils arranged so as to save time and steps. Plans are drawn and discussed. Lectures on farm home conveniences, school gardening and landscape gardening are dealt with by officials of the Departments of Agriculture, while the classes in the various subjects of Home Economics are being conducted by Mrs. A. E. Dunbrack, Supervisor of Women's Institutes, and Misses Helena C. Macdonald, Hazel L. Sterns, Alberta M. McFarlane, Assistant Supervisors.

It has been arranged to continue these classes throughout the month of March, the first class in this month commencing March 8th and closing March 20th.

NOVA SCOTIA.

REPORT OF STANDING FIELD CROPS COMPETITION FOR 1914.

BY F. L. FULLER, SUPERINTENDENT OF AGRICULTURAL SOCIETIES.

THE results of the Field Crops Competition in Nova Scotia for the past season were highly satisfactory.

In addition to a vast improvement in quality, there was a large increase in entries in all classes. The increase in oats and potatoes over 1913 amounted to 17 per cent and in wheat 14 per cent.

For wheat and oats, there was a competition in each county making five or more entries. For potatoes, the province was divided into four districts. The minimum number of prizes offered was four, where there were only five entries, and the maximum was twenty, where there were thirty or more entries. Prizes were paid according to the number of points scored, the rate being thirty cents per point for all points above sixty-five, our idea being that no

field, scoring below that number of points, was worthy of a prize.

The total amount of money paid in prizes was \$1,382.75, divided among the competitions as follows:—

Oats.....	\$796.93
Wheat.....	360.09
Potatoes.....	225.73

The highest score in the oats competition was 95.3, and the lowest 62.5. Eighteen per cent of the scores made were 90, or over, while only 12 per cent were below 70. In the wheat competition, the highest score was 94, and the lowest 65. Only 2½ per cent of the scores were below 70, while 25½ per cent were 90 or over. In the potato competition, one field scored as high as 97, while the lowest score was 72. Twenty-eight of the fields scored above 90, while only 14 per cent scored below 80.

In the potato competition, the district in which Lunenburg county is included, that county succeeded in capturing the first four prizes. The banner field scored 97 points, and the judge stated there was very little reason for not allowing it a possible score. All fields entered in the competition in this county were sprayed with Bordeaux mixture at least twice, some three, and the first prize field, four times.

In the report of the Lunenburg County Farmers' Association, the president, in summing up crop conditions in that county, pointed with pride to the fact that their county

had won the first four places in the potato competition for their district, and went on to say that the first prize field, containing just two acres, had yielded 970 bushels, and that the other prize winning fields had yielded more than 400 bushels per acre. The president, to a large degree, attributed the improved crops to encouragement given through "Field Crops Competitions." The benefits of competitions are, by no means, confined to the competitors. They have been the means of establishing the value of good seed, and have made it possible for farmers to get seed which can be relied upon.

BOX PACKING DEMONSTRATIONS.

BY P. J. SHAW, B.A., PROVINCIAL HORTICULTURIST.

THROUGH the co-operation of the Dominion Fruit Commissioner's Branch and the provincial Department of Agriculture, four demonstrations in box packing of apples were held in Nova Scotia during the month of January. Mr. A. H. Flack, Dominion Fruit Inspector for the Prairie Provinces, gave instruction in box packing to the short course and regular course students at Truro from January 7 to 12.

Demonstrations were then held in the apple packing warehouses at Berwick and Port Williams. A box packing school was held at Kentville between January 25 and 30, at which thirty-two students were enrolled. Mr. Flack showed how that most of the apples could be packed by either the 2-2 pack or the 2-3 pack. By the use of the following four rules and a table of packs Mr. Flack showed how any one could learn to pack apples in boxes without any difficulty.

RULES FOR BOX PACKING.

Method by which packers will determine packs to be used:—Packers should follow very carefully the following guide and under no circumstances whatever should they vary from it.

1st. If four apples of the same size fit side by side across the box, or four fit loosely and the fifth will not go in, the pack is 2-3. Five layers to fill the box.

2nd. If three apples fit loosely across the box, side by side, and the fourth will not go in, the pack is 2-2. Four layers to fill the box.

3rd. If three apples fit tightly across the box side by side the pack is straight 3. Three layers to fill the box.

4th. If two apples, side by side, fit loosely across the box, and the third will not go in, the pack is 2-1. Three layers to fill the box.

TABLE OF PACKS.

2-1 DIAGONAL PACK:—

2-1, 4-4.....	36 apples to the box.	Pack on side.
2-1, 4-6.....	41 apples to the box.	Pack on side.
2-1, 5-5.....	45 apples to the box.	Pack on side.

STRAIGHT 3 PACK:—

3 wide, 5 long.....	45 apples to the box.	Pack on side.
3 wide, 6 long.....	54 apples to the box.	Pack on side.

2-2 DIAGONAL PACK:—

2-2, 3-4.....	56 apples to the box.	Pack on end.
2-2, 4-4.....	64 apples to the box.	Pack on end.
2-2, 4-5.....	72 apples to the box.	Pack on end.
2-2, 5-5.....	80 apples to the box.	Pack on end.
2-2, 5-6.....	88 apples to the box.	Pack on end.
2-2, 6-6.....	96 apples to the box.	Pack on end (side usually).
2-2, 6-7.....	104 apples to the box.	Pack on end.
2-2, 7-7.....	112 apples to the box.	Pack on end.
2-2, 7-8.....	120 apples to the box.	Pack on end.
2-2, 8-8.....	128 apples to the box.	Pack on end.

2-3 DIAGONAL PACK:—

2-3, 4-5.....	113 apples to the box.	Pack on end.
2-3, 5-5.....	125 apples to the box.	Pack on end.
2-3, 5-6.....	138 apples to the box.	Pack on end.
2-3, 6-6.....	150 apples to the box.	Pack on end.
2-3, 6-7.....	163 apples to the box.	Pack on end.
2-3, 7-7.....	175 apples to the box.	Pack on end (usually).
2-3, 7-8.....	188 apples to the box.	Pack on side.
2-3, 8-8.....	200 apples to the box.	Pack on side.
2-3, 8-9.....	213 apples to the box.	Pack on side.
2-3, 9-9.....	225 apples to the box.	Pack on side.

The 128 pack is very seldom used, except possibly for flat varieties.
The 113 and 125 packs have taken the place of the old square pack.

QUEBEC.

SHORT COURSES IN AGRICULTURE.

SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE.

THE short courses in agriculture for farmers at the school of agriculture, Ste-Anne de la Pocatière have just closed. Over two hundred persons were present at the lectures. The attention never lagged, showing the interest the people take in the work, the fine points were noted and questions were asked in order to elucidate some subjects or to secure information for special conditions.

The attendance at these short courses is increasing every year, showing that this method of teaching is keenly appreciated and that the farmers are making good use of it.

SUBJECTS TAUGHT.

The following subjects were taught

Bookkeeping: Necessity of bookkeeping at home and on the farm. Method of bookkeeping.

Dairying: Study of dairying, its importance in all countries. The important part which it is called on to play in the province of Quebec.

Milk: Care of milk. Bacteria in milk.

Milking: Precautions to be taken before and after milking.

Feeding: Of bulls, cows, heifers, calves. Maintenance and production rations. Meals at regular hours so as to avoid any sudden change in feeding. Importance of green or succulent food.

Selection of a Breed: Pure breeds or grades. Selection. Study of the various breeds. History. Characters. Importance of the bull, of the dam, of the ancestors. Marks by which a good dairy cow may be recognized.

Bovine Tuberculosis: Clinical symptoms, propagation, tuberculin test.

Testing Dairy Cows: Its official organization. Its importance. Significance of the results.

Farm Manure: Its value and use.

Chemical Fertilizers: Their value, mode of purchase and method of application.

Rotations: Their importance and various systems of rotations.

Corn and Root Plants: Value of corn. Manuring. Preparation of the soil. Date of seeding. Varieties. Cultivation. Ensilage.

Roots: Selection and preparation of the soil. Manuring. Seeding or transplanting. Cultivation. Preservation.

Meadows: Their importance. Establishment of artificial, temporary, natural or permanent meadows. Nature and preparation of the soil. Seeding.

Cereals: Wheat, barley, oats, rye, buckwheat. Nature and preparation of the soil. Seeding. Harvesting and storing. Selection.

Forestry: Value of the forests as ornament, as a beneficial factor in hygiene and agriculture. Why they should be protected.

Fruit Culture: Care of young fruit trees up to the day of their coming into bearing. Renovation of the old orchard. Strawberry growing.

Beekeeping: The contents of the beehive. How to have a strong colony for the honey season.

THE OKA AGRICULTURAL INSTITUTE.

BY THE SECRETARY OF THE OKA AGRICULTURAL INSTITUTE.

From January 11 to 23 short courses for farmers were given at the Oka Agricultural Institute. These courses included the following subjects:

FIRST WEEK.

General Farming: Treatment of soils, manures, cultivation, growing fodder crops, cereals, leguminous plants; rural construction and rural bookkeeping: Professor I. J. A. Marsan, and various lecturers.

Gardening and Canning of Vegetables and Fruits: R. P. Athanase and L. Arscott.

Fruit Culture: All the work in connection with the nursery and the orchard: R. P. Léopold, Professor G. Reynaud, P. Honoré, and T. Roy, B.S.A.

By-Products of Fruit Culture: Cider, vinegar, etc., Fr. Sébastien.

Good Roads: Localization, construction and maintenance: Gabriel Henry, engineer.

The Horse: Breeding, etc., Fr. Isidore.

SECOND WEEK.

Cattle Breeding and Dairying Industry: Fr. Isidore, J. E. Trudel.

Poultry: Rev. J. B. A. Allaire, Br. Liguori, Fr. Wilfrid and R. Dumaine, provincial poultry instructor.

Beekeeping: R. P. Maur and Dr. E. Lalonde; bee diseases, fowl brood, etc., J. Beaulne.

Swine Breeding and Preparation of Cured Meat: Professor A. Hansen, Danish expert.

The Maple Sugar Industry: J. E. LeFebvre, Waterloo, Que.

Agriculture and Agricultural Teaching in the Rural Schools: J. C. Magnan, B.S.A.

Co-operation among the Farmers: A. Vanier, LL.B., president of the co-operative store, Montreal; H. Desloges, manager of the co-operative store; Rev. J. B. A. Allaire, lecturer on co-operation, and J. T. Bertrand, scientific agriculturist and engineer, Isle-Verte, Que.

Daily Classes: Three lectures and two classes of practical work.

Organization of Practical Work: Students are divided by groups of say fifteen and the work is done under the direct supervision of a teacher or an instructor who first explains what is to be done, answers the questions, and closely observes the work of each of the pupils. This practical work consists of the following:—

Fruit Culture: Grafting fruit trees.

In the Garden: Making and sowing hot beds, etc.

In the Poultry House: Slaughtering and plucking fowls by the most up-to-date methods, testing of eggs, handling of the incubators.

During the short courses the annual meeting of the Quebec Farmers' Experimental Union, and the annual meeting of the Young Farmers' Association were held.

Attendance: These short courses were followed regularly by 127 students who found board and lodging at the Institute. There were also about one hundred other persons not entered as regular students, who were boarding outside.

AGRICULTURAL INSTRUCTION IN THE SCHOOLS.

BY J. C. MAGNAN, B.S.A., DISTRICT REPRESENTATIVE.

CHILDREN'S GARDEN CLUB AT THE COLLEGE OF ST-CASIMIR, PORTNEUF COUNTY, QUE.

AGRICULTURE is taught at the College of St-Casimir by means of class work and practical demonstrations. This year a Children's Garden Club was organized, the members of which were

In order to encourage the pupils I organized, with the help of the school board, a school fair in the parish on the 12th of September, 1914. Over 175 exhibits of vegetables, 22 sheaves of Banner oats, selected by the pupils in the field, and 18 platesful of fruit were exhibited by the children. Games had also been arranged for during the day



BOARD OF DIRECTORS OF SCHOOL GARDEN AT THE COLLEGE OF ST. CASIMIR, QUEBEC.

selected among the pupils who appear to take a great interest in horticulture.

This club, the object of which is to train children from an early age in agricultural co-operation, is organized on the same basis as the ordinary farmers' club, with a few modifications necessary for the school children. The club now includes some sixty children who are doing horticultural work. All of them had the management of a small garden to which they gave very good care. Some of the pupils had their gardens at home.

in which all the pupils took part.

CHILDREN'S POULTRY CLUB.

A Children's Poultry Club for home practical work on poultry was organized in connection with the College of the Christian Instruction Brothers, at St-Casimir de Portneuf, where 200 pupils received instruction in agriculture.

In the spring the members of the club, numbering about 30, were each supplied by the Quebec Poultry Division with a setting of eggs of Barred Plymouth Rocks. Each of

them had to report on the various phases of the incubation period and the testing of eggs. They also had to record the method of feeding and other observations. Each of them had been supplied with the bulletin entitled "Ten Years of Practice and Experiment with Poultry" published by the Quebec Department of Agriculture.

The pupils took a very active interest in this work which has taught them the value of co-operation; they have also learned to think for themselves, to conduct experiments, and they now have more respect for the agricultural profession. In the fall as a fitting climax to their work, they exhibited their finest chickens at the school fair held at St-Casimir on the 12th of September.

Some sixty-five chickens selected among the finest types of Plymouth Rock were showed at this fair by the pupils. Practical demonstrations on the killing of chickens had also been organized in connection with the

fair by the club, with the generous co-operation of the Quebec poultry division. These demonstrations were seen by some two hundred and fifty children and a part of the population of St-Casimir and have produced excellent results.

Prizes were given to the pupils who had made the greatest success in raising chickens. They were given at the fair by the Quebec Department of Agriculture, the poultry division, the school board and the district representative.

In the fall the club conducted an experiment in crate fattening of chickens with some thirty chickens. These chickens were sold at 18 cents a pound in Montreal while at the same time, in the locality, chickens weighing from four to five pounds were being sold at the price of forty cents a pair.

To sum up, the work of the Children's Poultry Club of St-Casimir has given practical and most encouraging results.

MACDONALD COLLEGE.

SCHOOL OF HOUSEHOLD SCIENCE.

BEGINNING January 5th and ending January 15th the School of Household Science, Macdonald College, held for the second time a series of short courses at various centres of the province of Quebec. Last year saw the

beginning of this movement, and the appreciation shown then justified a similar course being planned this year.

The following table shows the number of meetings held and the attendance at each:—

NAME OF PLACE.	Number of Meetings.	Attendance.		Average Attendance.
		1st.	2nd.	
Knowlton.....	2	35	23	29
West Shefford.....	2	35	40	38
Marbleton.....	2	30	3	30
Sawyerville.....	2	90	100	95
Scotstown.....	2	30	22	26
Hemmingford.....	2	54	50	52
Coaticook.....	1	..	21	21
Lennoxville.....	2	37	50	43
Breckenridge.....	1	26	..	26
Total number of meetings.....	16	Total Average		40

Although the attendance was in some cases not so large as last year the courses, judged from the standpoint of interest and enthusiasm, were even more successful.

The lectures and demonstrations on the courses this year were as follows:—

Textiles: Miss K. A. Fisher; Pure Food Laws: Miss K. A. Fisher; Feeding Children and School Lunches: Mrs. T. T. Rutter; Planning the Daily Meals: Mrs. T. T.

Rutter; Poultry Keeping for Women: Miss Lena Nicholson; Methods in Laundry Work: Miss A. E. Hill; The Convenient Kitchen: Miss A. E. Hill; The Pictures on our Walls: Miss Thompson; The Relation of the Homemakers' Club to the Rural School: Miss Philp; How to Keep Household Accounts: Miss Philp; Demonstration in Millinery: Miss Alice Zollman; The Homemakers' Club and its Place in the Community: Miss F. Campbell; The Girl on the Farm: Miss F. Campbell.

ATTENDANCE AT WINTER SHORT COURSE LECTURES AT CENTRES IN THE PROVINCE OF QUEBEC, 1915.

	Meetings for		Total.	Number of Meetings.	Average per Meetings.
	Men.	Women.			
Jan. 4. Magog.....	20	2	23
5. Ayer's Cliff.....	25	...	45	2	53
6. Coaticook.....	50	...	105	3	39
7. Marbleton.....	45	21	116	4	34
8. Sawyerville.....	50	30	136	4	76
9. Scotstown.....	65	90	305	4	31
11. Hemmingford.....	50	100	122	4	68
12. Athelstan.....	35	30	270	2	36
13. Kensington.....	35	22	71	2	51
14. Danville.....	70	54	102	2	56
15. Richmond.....	96	50	112	2	54
16. South Durham.....	22	...	108	2	75
4. Knowlton.....	49	...	150	2	29
5. West Shefford.....	54	...	117	4	49
6. Bedford.....	46	...	195	2	51
7. Waterville.....	66	...	102	2	46
8. Lennoxville.....	43	...	91	4	64
12. Chapeau.....	65	...	255	2	200
13. Calumet.....	115	...	400	1	61
13. Dunraven.....	25	35	62	1	62
14. Bristol Corners.....	32	25	62	2	63
15. Breckenridge.....	70	35	126	3	75
	50	40	151		
	70	...			
	32	...			
	63	...			
	104	37			
	64	50			
	150	...			
	250	...			
	71	...			
	62	...			
	51	...			
	75	...			
	60	...			
	65	26			
Totals.....	2,527	675	3,202	58	56

In all 58 meetings at 22 places in 11 counties.

Total attendance, 3,202.

Largest meeting, 250; smallest, 20.

Forty-two of the meetings were for men—total attendance, 2,527—average per meeting, 60; 16 were for women—total attendance, 675—average per meeting, 42.

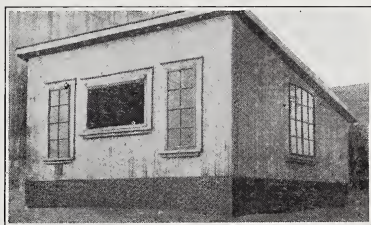
Ninety addresses were given by 17 different members of the College Staff—from 1 to as many as 12 having been given per individual.

DEMONSTRATION POULTRY HOUSES.

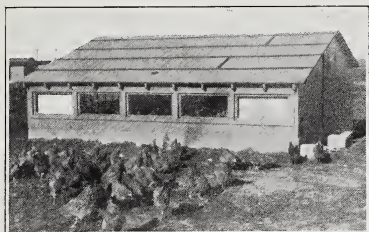
BY M. A. JULL, B.S.A., MANAGER AND LECTURER IN POULTRY DEPARTMENT.

IN order to determine the most satisfactory types of houses for laying fowls for the province of Quebec the Poultry Department of Macdonald College has had erected six demonstration houses in different parts of the province. In Pontiac county the house is located at Yarm on the farm of Mr. Bert Hodgins, the house in Chateauguy is located at Athelstan on the farm of Mr. E. C. Boyce, in Rouville county the house is located at Rougemont on the farm

in view of making the demonstration of as local a nature as possible.



THE "SHED-ROOF" POULTRY HOUSE,
ERECTED AT ATHELSTAN, QUE., AND
AT CAPELTON, QUE.



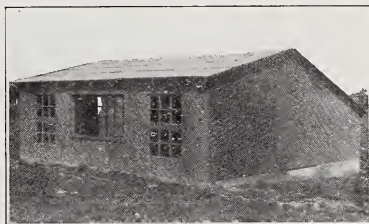
THE "TOLMAN" POULTRY HOUSE,
ERECTED AT YARM, QUE., AND AT
DUNHAM, QUE.

of Mr. Edgar B. Standish, in Missisquoi county the house is located at Dunham on the farm of Mr. G. M. Beach, in Sherbrooke county the house is located at Capelton on the farm of W. G. Loomis, and in Compton county the house is located at Cookshire on the farm of Mr. E. N. Chaddock.

These houses will serve the purpose of experimentation and demonstration, the primary object being the improvement throughout the province of farm poultry housing. The houses have been located on carefully selected farms with the purpose

Three different types of houses have been erected and the conditions of management are made as comparable as possible.

Careful records are being kept for at least three years concerning the management of the poultry plant and expenses and receipts. The houses are open for inspection at any time and farmers are invited to examine the house in their district. Each farmer who has a demonstration house is always glad to assist



THE "MACDONALD" POULTRY HOUSE,
ERECTED AT COOKSHIRE, QUE., AND
AND AT ROUGEMONT, QUE.

the farmers of the community in their poultry housing problems. When the records are completed at the end of three years it is hoped that the available information obtained from this demonstration scheme will be of much value in improving the poultry industry through better housing of the laying stock.

EDUCATIONAL EXHIBITS.

In regard to extension work this department arranges educational exhibits for the larger poultry and agricultural shows held in the English speaking sections of the province. These educational exhibits deal particularly with the commercial side of the poultry in-

dustry. These exhibits are comprised of models of poultry laying houses, brooder houses, trap-nests, fattening crates and batteries, dressed poultry cooling racks, egg cases, shipping boxes, incubators, brooders, and many other models of apparatus used in the raising of poultry. Charts showing the ideal types of the more important breeds of poultry, reading charts which emphasize the leading features of the poultry industry, and other material is used to encourage the interest in poultry keeping. Blue prints, giving plans and specifications of poultry houses, are distributed free as well as our bulletin on "Farm Poultry."

ONTARIO.

INSTRUCTION AT WINTER FAIRS.

BY R. W. WADE, B.S.A., DIRECTOR LIVE STOCK BRANCH.

PRIZE LIST.

A prize list should be as generous as the funds of the Association will warrant. There should be a very strict yearly revision in order to correct errors of judgment and to change classes where owing to increases or decreases, the prizes should be raised, lowered or in some cases, done away with entirely. In making up a prize list, market conditions throughout the country should be observed. A prize given for a class of animal for which there is no market, is a deliberate waste and instead of being an educative feature, is actually the reverse:—example, export steers. Prizes should be so arranged as to bring out those classes, which show various breeds at their best and prizes offered to animals whose utility is questionable (shearling wether) should be made as moderate as possible. The Fair Association and the exhibitor must work together to the

up-building of any show. The exhibitor's standpoint may be more or less commercial. The show management must never be but must always look to that arrangement of exhibits, prize money, and program of judging, which will tend to be the most educative to the visitor at the same time not bearing too heavily upon the time of the exhibitor.

ADVERTISING.

The advertising in the prize list must be in every case from reputable firms of high standing. The least tendency on the part of a show to include questionable firms in their advertising columns, will prove detrimental, as the public will not have that confidence in the management and trust in the printed page of the prize list. The firms contributing to the advertising pages, should be those that are more or less intimately connected with agriculture.

ARRANGEMENT OF EXHIBITS.

Exhibits should be arranged in breeds and classes where at all possible. This can be done with poultry, beef and dairy cattle and to a considerable extent with sheep and swine. With the horses, it is somewhat different as owing to the care and work involved, it is necessary that animals owned by each exhibitor be placed by themselves. As soon as the exhibits are in place, the catalogue number should be tacked to the stall in order that the visitor may, from the catalogue, have information regarding the animals on exhibit. As soon as prizes are won, a prize card corresponding in colour to the ribbon given, should be tacked under the catalogue number. Where animals are placed in classes, this gives the visitor and student of live stock, an opportunity to study the work of the judge and to thereby learn the type of the various breeds and the points of excellence desired by the judge. In the case of *carcasses*, these should be placed in order of merit that the stockmen and visitor may be able to see the desirable points of a carcass and where one exhibit is superior to the other, which he cannot do if the prize winners are not placed in order, it being impossible for a person to carry the idea of uniformity, evenness of fat, thickness of fleshing, in his mind when having to go from one section of the carcass room in order to see the next prize animal in some distant section. The *poultry coops* should have on them a card bearing the catalogue number, sex, class and the owner's name, and a small sticker, showing the prize won. This gives the fancier an opportunity to study the work of the judge. It makes the judge more careful in his awarding of the prizes and the casual visitor has something more to study than merely a row of birds. The leaving off of sex and prize on the card, does not give the visitor a chance to know which bird was the actual winner, where double cooping is practiced.

Where space is available, the *swine* exhibits can be arranged in breeds and classes and the arranging of them this way with the coloured card, showing the prize won, is not only of advantage to the exhibitor who gets credit for the prize, but to the prospective buyer who has an opportunity of studying the type of his favourite breed. In the case of the breed champions, they should have a separate pen and some distinctive card showing that they are the champions of the breed and thereby attracting the attention of the visitor. If space permits, *sheep* should always be arranged in breeds and by having a series of moveable pens, the first, second and third prize winners in each breed, should each have a small pen to itself, with the prize card and catalogue number. These winners should be side by side and if this were followed in all classes of sheep instead of the sheep exhibit being little visited, it would prove to be one of the exhibits which would create a great deal of interest and instead of the paltry few dozens who now visit the sheep pens, the visitors could be counted by the thousands. The *dairy cows* must be placed in breeds and classes and after the test is over, which should be as early as possible, the cows might better be placed in order of merit, so the visitor would have the best opportunity to study individual excellence. The result of the dairy test must be out early in order to give people who are visiting the show the first two days, as good an opportunity to see the prize winning dairy stock, as those who come later. The *dressed poultry* exhibit should be carded in order that the farmers may be able to see exactly what breed shows the greatest excellence and if an explanation were put on the card of the group exhibits, it would be educative in effect.

PROGRAM OF LECTURES AND JUDGING.

This must be so arranged as to

give a maximum of interest and attendance. Where space is limited, it would appear to be good also instead of having two good days, at the middle of the show, to make the program day by day so uniformly excellent that there would be a tendency to distribute the attendance over four days rather than to have a tremendous congestion for two days and light crowds the opening and closing days. *Lectures* should not be held when interesting classes are being exhibited in the ring and evenings might be better given over to various association meetings than to lectures, which are often so poorly attended. Possibly the holding of one lecture each afternoon from 1.00 to 2.30 would prove satisfactory; commence judging in the ring at 2.30. The managers of the show should make it their aim to have all necessary information posted on a bulletin board or announced from the arena at stated intervals, so that the visitor may not only have the official program as a guide but if any additional attraction or information is forthcoming, he will be in a position to know in time to take advantage of it. It might take a year or two to get the visitors and exhibitors taking advantage of a bulletin board but once they see its advantages, they will be on the alert to find if there is any information that the management has secured and which the management wish the exhibitors to have knowledge of. This is undoubtedly true in regard to the issuing of freight certificates, the securing of prize money and the time trains will be ready for the stock. The management should also have a railway time table in various parts of the building, so that the visitor will feel as if he is being looked after and will not miss trains owing to lack of knowledge. In case of change of trains or special trains being put on or delayed, the bulletin board would prove a very satisfactory source of information. If feasible, *lantern slides* giving the placing of

the classes, would be exceedingly valuable. Where this is not done, the best of help must be in the ring-side in order that the information regarding the prize winners shall be given quickly and accurately to the spectators. The management must see that the judging program as well as all other events shall occur as given in the program and where possible in the official program, which is mailed previous to the show, and contains the various classes and when they are judged in order that the man living at a distance from the show may be able to attend that particular day when his favourite breed or class is to be judged. If he is unfortunate enough to miss the class when judged, then through the catalogue and prize card on the stall, he will still be able to see the prize winners that were before the judges and to draw his conclusions therefrom. The lecture program should really be more of a convention of the live stock interests, where some well known authority gives an address on a topic which is of immediate interest to that particular section of the country at that particular time, illustrating where possible by means of slides. The lecture need not be long and may be followed by a discussion. This, of course will be at its best only when the chairman has such a knowledge of the wants of the country and sympathy with the farming interests as to bring out to the greatest degree that free expression of speech which should make every lecture at a winter fair, of the greatest interest to the agricultural community.

CATALOGUE.

After the exhibition is over, if it could be worked out satisfactorily, a large number of catalogues could have been left in the press and the prizes awarded could be set up on the margin, thus making the catalogue an absolute, official report of the show. The poultry man should have

a small separate catalogue, giving the catalogue number of birds exhibited and prizes given. The same would apply to the seed growers and these catalogues with the prizes marked, would prove of great advantage to the exhibitors at the show. If it were found that it was not wise to put the prizes on the margin, the catalogue of live stock, poultry and seed, would still be valuable as a means of giving information to stockmen and grain growers in other parts, as to what man had particular classes of product for sale and to enhance the reputation of the exhibitors, there should be a culling committee, so that every person whose name appeared in the official catalogue, would be as it were O.K'd by the management, that is to say, his exhibits were counted of sufficient quality to enter for competition at the winter fair. In the building or making additions to a building, space should be left for the exhibition of animals alive and similar animals dressed. It would also be to the advantage of the educative part of the show to make arrangements with college or leading stockmen to have prepared a number of animals of the highest market value, so that the live animal and its mate killed and dressed with values given, would be available to the stockmen and visitor.

The above notes give in a rather disconnected way, features which should make a winter fair more attractive to the people and therefore

a show able to pay such prizes as would make it very attractive to the stockmen. It is rather a difficult matter to get the heartiest co-operation of the exhibitor on what he might consider to be mere fads; however, as time went on and the men with the good stock given a superior opportunity to display them and the education disseminated by means of the show through the visitors, catalogues, publicity, etc., the most progressive exhibitors would come to see these special features were to his interests as well as to the general welfare of the show. Most of these special features do not entail a great outlay of money but where the management is endeavouring to give as good a prize list as possible, every dollar spent on special features would appear to many to be just like taking the money from the exhibitors. It would then seem, in order that any winter fair should put on exhibits from the highest educational stand point, that some other source of revenue is required outside of entry fees, association grants and gate receipts. It would not be well to increase the revenue to too great an extent by advertisements, as only the advertising of standard goods from reliable firms would be tolerated. This would lead to the conclusion that any winter fair to do the utmost good, should be generously supported by either county, provincial or federal grants.

DOMESTIC SCIENCE COURSES.

THE Institutes Branch of the Ontario Department of Agriculture arranged and conducted four weeks' Domestic Science Courses at Kilsyth in Grey county, Ont., from January 12th to February 5th, and at Aylmer, Ontario, from January 26th to February 19th 1915. These courses consisted of 32 lessons,

16 morning classes for girls and 16 afternoon classes for girls and women. The subjects receiving special attention were as follows:

1. Fruit—typical methods of cooking, combinations; different ways of serving fresh fruit.
2. Vegetables—fresh, starchy and dried.
3. Milk—soups, puddings and combina-

tions with special relation to infant, children and invalid diet.

4. Cereals and Cheese—various ways of cooking; their high food value compared with other more expensive foods.

5. Eggs—correct methods of cooking; varieties in methods; storage.

6. Meats—tender meats; roasting and broiling. Tough meats, braised dishes, stews and soups. Food values and methods of cooking the different cuts.

7. Baking powder, bread and fancy yeast breads.

8. Cakes and little cakes.

9. Puddings and desserts.

10. Salads—preparation of the ingredients, dressing, etc.

11-16. Instructions in poultry raising and dairying.

The morning sessions were in co-relation with these, including sub-

jects like breakfast dishes, supper dishes, made over dishes, pastry, beverages, and light refreshments, invalid cookery, meat substitutes, table setting and serving. The comparative value of our more common food stuffs were given consideration and illustrated by use of charts.

The class at Kilsyth included 40 girls and women, with an average attendance of over 30, while at Aylmer the attendance on the second day of the course numbered 78.

A new feature in connection with these courses was the giving of instruction to the boys, girls, men and women, at the same time, by the same instructor, so far as the poultry and dairying part of the programme was concerned.

MANITOBA.

HOUSEHOLD SCIENCE INNOVATION.

AN innovation in Household Science teaching, in so far at least as this country is concerned, has been established at the Manitoba Agricultural College.

Recently a number of young men who are homesteading, or who expect to be otherwise dependent upon their own resources, expressed a desire to secure lessons in Cookery. When the announcement was made that instruction would be given in this

subject at the end of the day, during the hour set apart for recreation, a class of 37 came forward to assure the management of the College that they were anxious to take advantage of the opportunity to further equip themselves in this way for the emergencies of life.

These young men may be seen almost any evening from 4.30 to 5.30 preparing for the larger responsibilities of the home-steaders.

It is the duty of all Canadians to do as they are able in this destructive war. The best forces should be utilized in getting out the most from the soil. The responsibility bringing the war to a successful close lies largely with the farm producers. The question of greater efficiency in production should be carefully studied.—*Prof. G. E. Day.*

SASKATCHEWAN.

DEPARTMENT OF AGRICULTURE.

SOME WORK OF THE BRANCHES IN 1914.

FOR convenience most of the work of the Department of Agriculture is apportioned among branches each of which is under the direct charge of a head who is specially qualified for his or her work, and is responsible to the Deputy Minister. Such work as is not assigned to or undertaken by some one branch is directly under the supervision of the Deputy. The following statement presents in concise form some particulars of lines of work that can be mentioned in such a way, and as may be of interest to readers of THE AGRICULTURAL GAZETTE.

DAIRY BRANCH.

Staff: Commissioner; assistant commissioner; grader; 4 instructors; accountant and 8 clerks,—exclusive of creamery managers and operatives.

Appropriations: \$30,000 (exclusive of amounts advanced and recouped in connection with operation of creameries under annual agreements).

Revenue: \$7,500.

Operation of Co-operative Creameries:—Thirteen creameries were operated, 3,625 patrons supplied cream, 72 patrons supplied milk, 1,161,230 pounds of butter were manufactured during the summer months, the approximate value of which was \$295,264.59. Approximately 300,000 pounds of butter were made during the six winter months, 1913-14, and this had an approximate value of \$93,000; 33,270 cheques were issued to patrons; 47 visits were made by creamery inspectors.

NOTE:—All appropriations and estimated revenue are for Fiscal Year May 1st, 1914, to April 30th, 1915.

Development Work:—Fifteen districts were visited by instructors and creamery managers; 250 farmers and 37 milk shippers were visited; 95 institute meetings were attended; 6,473 persons received instruction at institute meetings.

Poultry Work:—Three fattening stations were maintained; 1,467 birds were fattened; 68 farmers supplied birds; 5 demonstration fattening stations were operated; 120 birds were fattened in demonstration stations.

LIVE STOCK BRANCH.

Staff: Commissioner, assistant commissioner, veterinarian, 4 buyers and inspectors, 8 clerks.

Appropriations: \$35,000 (exclusive of amount available for purchase of live stock under The Live Stock Purchase and Sale Act).

Revenue: \$8,000 (exclusive of payments on live stock under above named Act).

Live Stock Distribution:—Five hundred and twenty-five head of cattle were imported and distributed; 41 being pure bred bulls; 600 grade ewes were also distributed; 16 horses and 82 pure bred bulls were sold at the stock sales held in connection with the Winter Fair. At the annual Sheep and Swine sale 62 pure bred rams and 14 pure bred boars were sold, also several pure bred ewes and sows and goats.

Stallion Enrolment and Licensing:—Eight hundred and ninety-four horses were enrolled, 641 being pure breds, 137 grades and 116 scrubs; 219 transfers of enrolment were registered and 1,465 enrolments were renewed. Four hundred and eighty-two pure bred stallions were examined, 333 being licensed, 69 re-

ceiving temporary licenses; 65 were given permits and 15 were rejected. Four new municipalities were admitted as units of the Licensed Stallion District and eight were permitted to withdraw (in all but one case on account of an insufficient number of licensed horses) making the total number of rural municipalities now comprising the Licensed Stallion District 63.

Miscellaneous:—A bulletin on Enrolment and Registration of Stallions in Saskatchewan was prepared, 5,000 copies were printed and 4,500 copies distributed. A bulletin on the Care, Handling and Marketing of Wool was prepared, 1,000 copies were printed and distributed among sheep owners in the province. A pamphlet on Blackleg was issued and upwards of 3,000 copies were distributed. Press bulletins, dealing with seasonable live stock topics were issued throughout the year.

WEED AND SEED BRANCH.

Staff: Commissioner, 5 field representatives, 2 clerks.

Appropriations: \$13,800.

Revenue: Nil.

Administration of The Noxious Weeds Act:—The work of 45 agricultural secretaries and 730 weed inspectors, all appointed and paid by municipalities, was supervised by 5 field representatives of this branch. These men also assisted on the Better Farming Train and held 110 institute meetings. A ten-day short course for agricultural secretaries and weed inspectors was held in Regina in June. At this the average daily attendance was 80, but a total of 130 municipalities were represented.

Miscellaneous:—A total of 12,730 circular letters on 37 different topics were sent to municipal officers and others. Supplies of The Noxious Weeds Act and bulletins were sent to each agricultural secretary, or weed inspector, for distribution. Bulletins, copies of The Noxious

Weed Act and threshing machine cards were also mailed on request to many municipal officials; in all a total of 12,000 copies of the Act; 15,000 Weed bulletins and 13,000 threshing machine cards were distributed. Two thousand each of 7 separate leaflets on agricultural secretary work were issued and 4,500 posters drawing attention to the importance of testing seed grain were printed and distributed.

CO-OPERATIVE ORGANIZATION BRANCH.

Staff: Director, assistant and clerk.

Appropriations: \$9,000 (exclusive of wool accounts).

Revenue: \$2,500 (exclusive of wool account).

One hundred and thirteen agricultural co-operative associations have been registered. These have an average authorized capital of \$6,900. In connection with this work the director attended and addressed 20 meetings and 5 farmers' conventions.

Nine thousand copies of The Agricultural Co-operative Associations Act were printed and 5,000 copies have been distributed; 20,000 pamphlets explaining the provisions of the Co-operative Act were prepared and printed and 15,000 copies have been distributed; 1,000 copies of The Co-operative Associations Act and Standard By-laws were printed in German; 500 copies of Extracts from The Companies Act were prepared and printed and 200 copies have been distributed.

A pamphlet on Live Stock Marketing was prepared; 5,000 copies were printed and distributed. A pamphlet on Co-operative Beef Rings was prepared; 1,500 copies were printed and distributed. A bulletin dealing with Live Stock Marketing was prepared; 5,000 copies were printed and distributed.

During the summer a co-operative wool marketing project was inaugurated through which the wool from 180 flocks, amounting to 69,404

pounds, was marketed for farmers in the province, at a price that netted the producers an average of 16½ cents per pound, an advance of about 4 cents over the price usually obtained locally by individual small flock owners.

Better Farming Train:—For five weeks during the months of June and July the department with the co-operation of The Canadian Pacific Railway and the Saskatchewan College of Agriculture, operated a

Better Farming Train on the Canadian Pacific Railway lines in the more recently settled portions of the province. This train, carrying a staff of lecturers and a large quantity of demonstration material of interest to farmers and farm women, visited some 88 towns and villages, a stop of from three to three and one-half hours being made at each point. An average of over 400 people attended the meetings at each point. A total of over 36,000 persons received instruction.

A PROFITABLE CROP POSTER.

BY A. F. MANTLE, DEPUTY MINISTER OF AGRICULTURE.

THE Department of Agriculture of Saskatchewan has issued for general distribution over the province, posters and circulars containing instructions for the growing of profitable crops. The matter grew out of the realization, by the Honourable Mr. Motherwell and myself, that the lamentable crop failure in south-western Saskatchewan in 1914, need not, and would not, have been anything like so disastrous as it was if a larger percentage of the men in that area had been thoroughly apprised of the fundamental truths underlying profitable crop production on dry lands. We recognized that, for one reason or another, there were a great many men who are not reached or influenced by extension meetings, short courses, bulletins, farm journals, or any other existing means of agricultural instruction, and we felt that these fundamental truths underlying profitable crop production could, perhaps, be brought to the notice of this class of our farmers by means of a poster on which the information would be presented in short, pithy, concise and unconventional form.

Then, to accompany the poster, we presented the same information in leaflet form, so that the man who

possibly was interested in what he saw on the poster might put the leaflet into his pocket and read it over and study it after he got home.

We have already had to print twenty thousand copies of the leaflet and four thousand copies of the poster and fully expect that additional quantities of the leaflet will be required. Branch banks, lumber companies, municipal officers, grain growers' associations and others are writing in for anywhere from twenty-five to five hundred additional copies of the leaflet.

Our arrangement with the banks, by which they provide in each branch office in Saskatchewan a bulletin board for agricultural bulletins and notices, and we provide the material to be posted on the boards, is now in working order, and the first batch of material has gone out. We expect that a number of progressive general merchants, lumber dealers and other business men in country towns will be interested in these bulletin boards and want to provide one for their own place of business. We shall be glad if they will do so and will willingly supply them too with the same material as is supplied to the branch banks.

SUGGESTIONS TO AGRICULTURAL SECRETARIES.

THE Department of Agriculture is publishing in the form of a leaflet an outline of a number of lines of demonstration work which it is hoped will be taken up and energetically prosecuted by the municipalities through their agricultural secretaries.

It is suggested to the secretaries that a number of contests should be instituted, which will be conducted by the municipalities themselves and not by the department, as it is believed they will gain more by helping themselves and that the good results will be brought more closely home to them in this way. The department, however, will aid in the work, by supplying the seed, by sending representatives to visit the contestants, and in other ways. The following are the lines of work suggested:—

1. Demonstration tests of moisture in the soil. The department will supply the apparatus and full instructions.
2. Co-operative tests in growing alfalfa for seed.
3. Potato growing contest. This is in order to show the improvement which may be effected in the yield and quality of potatoes.
4. Municipal Seed Growers' Associations. This is to encourage the production of seed of maximum yielding power, by hand selection and other methods. It is hoped that from this work co-operative seed growing associations will be developed.
5. Boys' Pig Feeding Competition. This is in order to emphasize the import-

ance of details in the management of swine.

6. Co-operative Experiments in Variety Tests. This is to determine the variety of oats and barley best suited to a particular locality.
7. Contest in the growing of fodder corn. This is to develop the possibilities of growing corn for fodder in Saskatchewan.
8. Competition in the growing of seed corn. This is an endeavour to show the possibilities of maturing some of the early varieties of corn.
9. Boys' and Girls' 100 yard row yield competition. This competition will demonstrate the importance of high class seed.

Progressive municipalities are invited to undertake this work through their agricultural secretaries with the co-operation of the department in supplying the seed necessary for each suggested line of work. Departmental support is confined to municipalities employing agricultural secretaries because only in such cases can this work be economically and satisfactorily carried to fruition. It is certain that if the suggestions are carried out it will result in much benefit to all concerned and in the acquisition of a store of useful information and experience.

PAMPHLET ON WINTER RYE.

A pamphlet is being prepared by the Department of Agriculture on winter rye growing. This grain is very little grown in the province and little is known about it. The pamphlet will go far to remedy this lack of information.

ALBERTA.

CORN GROWING.

BY GEO. HARCOURT, B.S.A., DEPUTY MINISTER OF AGRICULTURE.

SO far but little attention has been given the growing of corn in Alberta. The various varieties of squaw corn have been

grown in the usual way at numerous points more or less continuously and with moderate success, while the cultivated varieties have been tried

only in a fitful manner at widely different points. So much success has attended these efforts however, that more extended trials are warranted. This idea is also strengthened by the fact that at a number of points well-ripened ears have been shown at the local seed fairs. With the arrival of a large number of American farmers during recent years, who have been accustomed to growing corn, more extended trials are being made and the conclusion is being gradually reached that there is, in an average of seasons, sufficient heat and a long enough growing period to produce ripened ears and in any event a very large amount of fodder.

On the Medicine Hat Demonstration Farm corn for fodder purposes has been grown successfully for three successive years, the fourth year was last year (1914) and the droughty conditions interfered with obtaining a full stand at germination time and also with subsequent growth. In spite of this a nice lot of fodder was obtained. On the Sedgewick and Vermilion Farms in 1913, nine and four acres respectively were grown. These plots furnished a lot of feed as the corn grew to a height of eight feet and gave a yield of about eight tons per acre. It did not ripen or cob as well as a seven acre plot at the Medicine Hat Farm. Both lots were sufficiently matured to put in a silo and made excellent silage.

A number of varieties were tested and the following order indicates those proving most satisfactory: North Western Dent, Compton's Early, King Phillip, Longfellow and Gehu. On the Medicine Hat Farm a considerable amount of King Phillip ripened sufficiently for seed. If seed can be produced it will not be long until hardier and earlier maturing strains will be available. It is said the corn belt is moving north at the rate of about five miles a year.

At the three Provincial Schools of Agriculture, Claresholm, Olds and Vermilion, experimental plots were seeded with some thirteen varieties

of squaw, pop and field corn. At Claresholm, Minnesota 13 was by far the leading variety for ensilage purposes, then Longfellow, Yellow Flint, North Dakota Yellow Flint, North Western Dent, Gehu and Free Press. Yellow Flint and Free Press developed the ears so close to the ground as to make harvesting difficult. The results were so satisfactory that one is able to predict that the day is not far distant when corn for fodder and ensilage purposes will be grown generally in southern Alberta.

At Olds the corn made a growth of approximately four feet in height and nubbins were formed, but the cold weather checked it so that no ears matured. Quebec Yellow was the most promising variety at the Vermilion School, while on the Demonstration Farm there, the corn made a very nice article of ensilage. The same was true of the corn on the Sedgewick Demonstration Farm.

Late spring frosts, early fall frosts and cold summer nights are the conditions that militate against successful corn growing. Consequently, seeding must not be too early and yet just as early as one dare in order to obtain as long a growing period as possible. About the 12th to the 20th of May will likely prove a suitable period for planting in the various districts of the province. Farmers will also learn to cultivate the land intended for corn several times in the spring before planting in order to warm it up and make it more suitable for the growing corn.

The methods of seeding, cultivating and harvesting are practically those generally followed elsewhere.

In conclusion it can be said that it will be some years before corn will be grown extensively in Alberta. On the other hand, in view of the results obtained by individual farmers and by the Dominion and Provincial Stations, corn is a crop well worth the serious consideration of every man who is feeding cattle, especially those engaged in dairying, on account of the bulk of succulent feed it produces.

PART III.

Provincial Departments of Education.

INFORMATION SUPPLIED BY OR THROUGH OFFICIALS OF PROVINCIAL
DEPARTMENTS OF EDUCATION.

THE MODEL SCHOOL GARDEN.

NOVA SCOTIA.

BY L. A. DEWOLFE, DIRECTOR RURAL SCIENCE SCHOOLS.

THE ideal school garden can seldom, if ever, be realized. A more or less near approach to it, however, is often possible.

The accompanying diagram suggests one of the many possibilities. A general diagram, however, must be modified to suit the size of the school grounds, the number of children, the ambition of the teacher, the slope of the ground, and the exposure of the ground relative to sunlight and prevailing winds. While drawing the diagram accompanying this article, I had in mind a school building facing south, with ample room at the back for a garden. In such a case, the spruce hedge or mixed wildwood would serve to keep off the cold north winds. Some school grounds are bordered by natural wood lots. Where this is true, there is no need of planting a wind-break.

The diagram is drawn to the scale of 20 feet to the inch. The left border is about nine feet wide. The hedge of Japanese rose (*Rosa rugosa*) will require about four feet. In front of that can be planted about thirty rosebushes consisting of ten or twelve popular varieties. That

will make one border a solid mass of rose bushes.

These borders are to be permanent. Therefore, they are planted with shrubs and perennial flowers. The back border is an exception; for if it be planted with native shrubs, trees and ferns, the cultivated flowers will slowly be crowded out. For that reason, sweet peas and other tall annuals or biennials may be planted for a few years until the wild border is established.

In the front border, ornamental shrubs are placed every ten feet; and perennial flowers occupy the space between and around them. The names of the shrubs are written parallel with the shorter diameter of the garden.

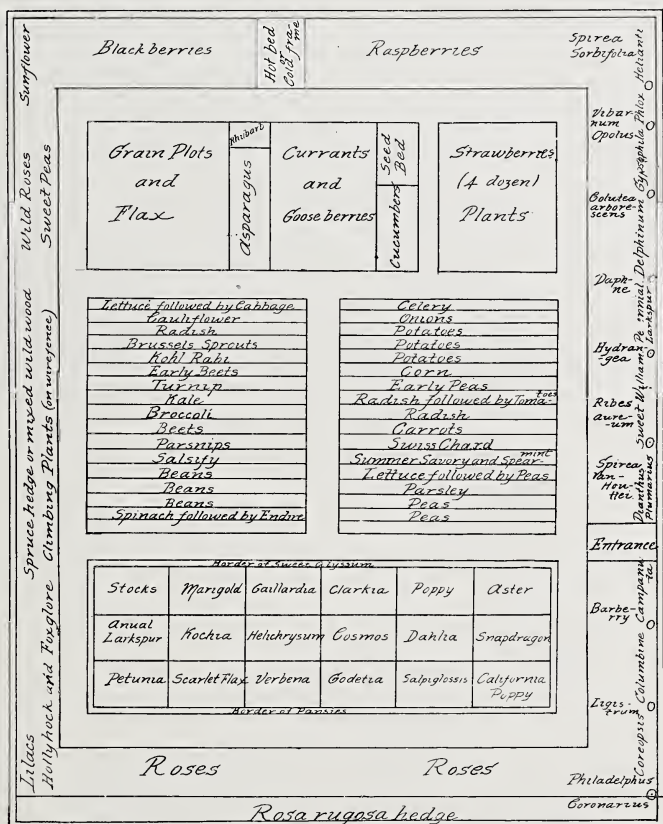
Blackberries and raspberries make a useful border for the remaining side.

The garden proper should have flowers, vegetables, grains and small fruits. The diagram shows the distribution of these.

In planting the flowers, I would not make raised beds. Between one flower plot and the next, I would leave a path two feet wide. Thus,

for early weeding and cultivation, the children can walk around every bed. When the plants are full-grown, the paths will be lost; but at that time no one needs to walk among them. The flowers in the centre plots are sufficiently tall to be admired from the path that sur-

row of radish comes between. These will be gathered before the other vegetables need the extra room. For the same reason, early beets come between kohlrabi and turnips; and early peas and radish border the rows of tomatoes. This will illustrate what is known as *companion crop-*



A SCHOOL GARDEN PLANNED BY L. A. DE WOLFE, DIRECTOR OF ELEMENTARY AGRICULTURAL EDUCATION FOR N.S.

rounds the whole flower garden. In fact, there are only four plots that do not border this path.

In the vegetable garden, the rows are uniformly twenty inches apart. As cauliflower and brussels sprouts should have more room than this, a

ping. Successive cropping is illustrated where cabbage or peas follow lettuce, endive follows spinach, or tomatoes follow radish.

Furthermore, all members of the cabbage family are planted together. This will make more convenient the

control of the cabbage worm. Extra rows of beans and peas will supply abundant material for demonstration in canning green vegetables. Moreover, some vegetables are introduced which are not in general cultivation on the home farm. Thus the school becomes the experimental station for novelties.

The omission of pumpkins and squash was intentional; for they demand more room than is usually available in a school garden. Here is where the home garden should supplement the school garden. Many children will want to plant at home the things they see planted at school.

More than two-thirds of the garden is planted with annuals. These come in one block, which will enable that part to be plowed.

Possibly one should specify varieties of each vegetable and flower recommended. That has both its advantages and disadvantages. Some

mechanical teacher, if she could not get the variety recommended would not plant any. It is better, I think, to get bulletins and reports from the Department of Agriculture, Ottawa, or from the Provincial Departments, and select from the varieties they have successfully tested.

The size of the garden in the diagram is 100 feet by 80 feet. Deducting borders and outer path, the permanent garden is 72 by 57. In a small school, this could be reduced, making every plot half size and every row half length. It would be better to reduce the size than to omit any part.

Where this garden would exist year after year, the annual flowers would be varied. Crop rotation should be exercised.

Out of the many possibilities, therefore, the diagram suggests one—not to be followed literally; but to be adapted to local conditions.

NEW BRUNSWICK.

BY R. P. STEEVES, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

AGRICULTURAL EDUCATION.

SCHOOL properties are owned by the districts. They are under the control and care of trustees elected at the annual school meetings. They include school grounds, buildings erected thereon, furniture and apparatus for teaching. It is therefore of prime importance that, if a school garden is to be established, official recognition be obtained. Not only is mere consent needed but the co-operation and sympathy of trustees, and at least of some of the ratepayers are very necessary.

The trustees should feel that the same responsibility that they bear in respect to care of furniture and apparatus in the school house, should be borne in respect to the premises, and therefore to the garden. Special school officers and teachers should

never lose sight of this fact. The Departments of Education and of Agriculture in this province require that a notification signed by trustees and teacher be filed early in the term if grants for school garden work are expected.

While garden work may be initiated at the beginning of the winter term (in January) we believe that the summer term (August), the beginning of the school year, is the proper time at which to begin.

Assuming that these preliminary conditions have been fulfilled, the location of the garden is the next point to be considered and decided upon.

1. It should be on, or contiguous to, the school ground. According to law the school ground especially in country districts should be one acre in extent. Except in the case of large

vation should be given to break up the sod and aid decomposition. In November before ground freezes a second ploughing quite deep should be given and a liberal dressing of barnyard manure applied.

During the winter it will be found of advantage for each pupil under the direction and guidance of the teacher in the school room to draw to scale a plan of the garden from measurements made in the fall. This plan should show walks and plots. The principal walks should be from $2\frac{1}{2}$ to 3 feet wide. Except on the rear sides of the garden where borders extending to the fence may be allowed, walks about the entire plot should be 3 feet wide. One drawn longitudinally through the centre might be of the same width. Other walks if two feet wide will generally be found satisfactory.

Plots from $2\frac{1}{2}$ to 4 feet wide and 10 feet long according to the age of pupils working on them, will be found to give good results.

For experimental plots in which the whole school may be interested 8 x 10 feet has proven good. In the smaller plots named above individual pupils should have charge. Ownership gives responsibility and best permits of a purpose being worked out to a finish. No more than two pupils can well conduct one plot and in such cases an equal division should be made.

While the plan is being made during the winter, talks will be conducted dealing with the kinds of seeds that will be planted and the proper relative places for each kind.

Low growing flowers might well come in narrow plots at the front next to the street and taller growing annuals and perennials on the fence side farthest from the school house. On the rear side tall growing annuals such as sun flowers will look well.

Care is needed so that tall plants may not obstruct the growth of low growing ones and also that the view

from the street and from the school house may be the best.

A loam soil will be found well adapted for level or nearly level cultivation. If surface of plots is much higher than the walks, should the season prove dry, the earth dries out more rapidly and the growth of plants is retarded.

Where the soil is clayey, or where it has not been heretofore well drained, a liberal dressing of lime, in its natural condition if obtainable, will be found of advantage. In any case during the fall it is well to study the character of the soil of the garden and make tests for acidity, amount of humus, and water content.

As soon as the ground is really fit to work in spring cultivation should begin followed by the lay out of the walks and plots. Stakes, four for each plot, and two or three good garden lines are essentials. These stakes should be one inch square, at least $1\frac{1}{2}$ feet long and neatly sharpened. They should be driven into the ground at the corners of plots leaving about three inches showing above the surface. The precision, accuracy and neatness exercised in this laying out work are of the utmost importance. Not only is the appearance of the garden greatly enhanced by attention to these details, as an educative process for the children they involve training in character.

Soil should be worked only when in a fit condition. It is imperative that a fine firm seed bed be secured. The seed drills need to be straight and regular. When the seeds are deposited and covered to the proper depth, from about one-quarter to one half an inch according to the size of seeds and the fineness of the soil, the earth should be firmed down. This can be done by walking on a board placed over the seed row.

Much depends upon being ready to begin work when the spring time arrives. The required seeds, decided upon during the winter, should

be on hand. They should have been tested for germination. Tools also ought to be in readiness in condition for work. Punctuality, forethought, being prepared to act, often spell more than mechanical success.

The accompanying plan represents merely a few suggestions for a plain garden that might easily be modified or extended to suit conditions of any locality. Much more elaborate designing may be desired by some. Such may recognize in this plan principles for application that may be useful. At least it presents in the concrete some of the ideas expressed in this article. Originality and individuality are not to be repressed. Teacher and pupils working together to secure a well planned garden adapted to local school ground facilities will in itself be an educative factor of no little importance.

If school ground is not enclosed a neat woven wire fence with a fair sized gate is imperative for this garden. Although the road law may prohibit animals from running at large, a fine garden might be destroyed by a runaway or other unforeseen

occurrence. If school ground is fenced this should be all that is necessary. Provision should always be made for getting on the garden with a team to plough and harrow.

If at the first of the winter term, school gardening be decided upon, the study in the school room of soil, its physical properties, its chemical elements, of seeds, what they contain, their germination, may with great advantage be taken up from January to March. All this work should be experimental in its character. The children should learn by doing. Talking with them alone, they being merely passive participants is not a system calculated to arouse interest and secure attention. The principle to act upon is "learning by doing."

Such work attractively presented and faithfully carried on will induce thought and prepare pupils to enter upon the outside active work in spring with intelligent purpose. They will have been taught how to observe and how to make records of their observations. They will not easily abandon their plots when vacation comes.

QUEBEC.

BY J. A. GRENIER, B.A., SECRETARY DEPARTMENT OF AGRICULTURE.

HORTICULTURE and school gardening play an important part in the rural school and even in schools of small towns and cities, as it is just as important to develop a liking for agriculture among city children as among rural children. A great deal would be gained if, by teaching horticulture in model schools, normal schools and colleges, we could make the young men understand the usefulness of the farming occupation and thereby remove this feeling of contempt which too many have for this profession.

I am pleased to mention here the interest which the Laval University

of Quebec takes in the agricultural movement. The University has just prepared a programme for the teaching of horticulture which will be followed by the great convents that are affiliated to the University.

The Department of Agriculture is fully aware of the importance of school gardens; they provide the easiest means for reaching all children; this work is as pleasant as it is useful for the pupils; through them the schoolmaster or the schoolmistress are able to teach the best principles of farming and to demonstrate, by object lessons, that success in agriculture, as elsewhere, always de-

pend on the amount of care and intelligence bestowed.

There were practically no school gardens in the province some twelve years ago; the first were inaugurated by Mr. O. E. Dalaire, Director of the St. Hyacinthe dairy school, who was entrusted with their management up to the present time. His first reports to the department date back to 1906. There were, at that time, only twenty-eight school gardens in the province, distributed in eleven counties and cultivated by 425 pupils; last year there were 284

longing to the school trustees and teachers. On an average they measure 35 x 30 feet. A large number of domestic science schools, model schools, high schools (*academies*), colleges and convents have large gardens with a few bee-hives, and orchard, a poultry house and a school museum, etc. One may form an idea of our gardens by examining the one at the commercial college of the Sacred Heart, Ste. Anne de la Pérade. Every year through the Department of Agriculture seed grain and chemical fertilizers are sent



SCHOOL GARDEN OF THE COMMERCIAL COLLEGE OF STE. ANNE DE LA PÉRADE, QUEBEC.

school gardens, distributed in 54 counties and cultivated by 9,308 children gardeners. Next summer will witness a large increase in this number. They will also be better kept, under a closer supervision from our district representatives and school inspectors. The latter have taken special courses at the Oka Agricultural Institute during the 1914 vacation in order to learn the best methods of culture and each one of them gave a series of lectures on the teaching of agriculture in the school when visiting the schools.

The area of the school gardens depends upon the amount of land be-

longing to the school teacher and prizes are awarded to the children gardeners. Last year a thousand settings of eggs were distributed through the medium of the district representatives of the department and of Macdonald College.

The district school fair is the natural complement of the school garden. Such a fair was organized last year at St. Casimir, Portneuf County and met with great success. This success has convinced us of the necessity of improving agricultural instruction in all the schools of our province by means of school gardens and school fairs.

ONTARIO.

BY S. B. MCCREADY, B.S.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

SCHOOL GARDENING, NATURE STUDY
AND ELEMENTARY AGRICULTURE.

THERE is a good deal of confusion and misunderstanding concerning the relationship between School Gardening, Nature Study and Elementary Agriculture. In order to make headway in the proper direction it is very necessary that teachers and school inspectors should be clear in their minds in regard to these terms.

The meaning of School Gardening.—The word "school" in the expression "School Gardening" marks an important and fundamental distinction; it indicates that the chief purpose in bringing gardening into school work is *education* for the child. This should not be lost sight of. A garden at school may be quite a different thing from a school garden. It is not the location at school that makes it a school garden. A child's garden at home may be a real school garden and of the very best kind. A plant in a flower pot may be a child's garden. Caring for an apple tree may be school gardening. An experiment with field crops carried out by a high school pupil on his father's farm is school gardening. It is not location, nor size, nor crop, nor the age of the pupil that determines whether a garden is a school garden; it is the *purpose*. Primarily the aim is not to grow grains, flowers, or vegetables. The purpose is higher. It is to furnish incentives and provide a field for work that will be rich educationally in recreative, instructional and character-forming experiences.

The location of the pupils' plots has led to a differentiation expressed in the terms Home Gardens and School Gardens. From the pedagogic standpoint there is no essential difference in the meaning of the terms.

NATURE STUDY AND ELEMENTARY
AGRICULTURE.

In point of time there is a wide separation between these two subjects. Nature study was born into the educational world about the beginning of this century. Elementary Agriculture has been struggling for a place in Ontario schools since about 1845. Nature Study has re-shaped the elementary Agriculture by naturalizing it. As a school subject Nature Study has two sides to it; from the side of subject matter it includes all the natural objects of the farm and so includes most of the concerns of agriculture; from the side of teaching, it implies a natural way of learning about nature by individual observation and experiment. Nature study has brought a method of teaching and a method of study to the subject of Agriculture. It has destroyed its bookishness and replaced it with a *natural* or as it is called a *Nature Study* method of treatment.

A distinction in terms has arisen here also. While Nature Study in a large sense includes Agriculture, many teachers restrict it to studies of birds, trees, insects and flowers, studied apart from any special application to farming. And Elementary Agriculture has come to refer to studies of plants, animals and soils that have direct bearing on the work of the farm. In method of teaching the two are similar; in subject matter they may be treating of the same things; but in the *motive* they stand apart. Elementary Agriculture is *agriculturalized* Nature Study.

To present the chief features of the ideal school garden aimed at for Ontario rural schools, I cannot do better than quote from some of the Agricultural Education Bulletins and circular 13 which set forth the plans

of the Ontario Department of Education for instruction in Elementary Agriculture. It is needless to say that for towns and cities, such a garden would not be suitable.

AN IDEAL COUNTRY SCHOOL.

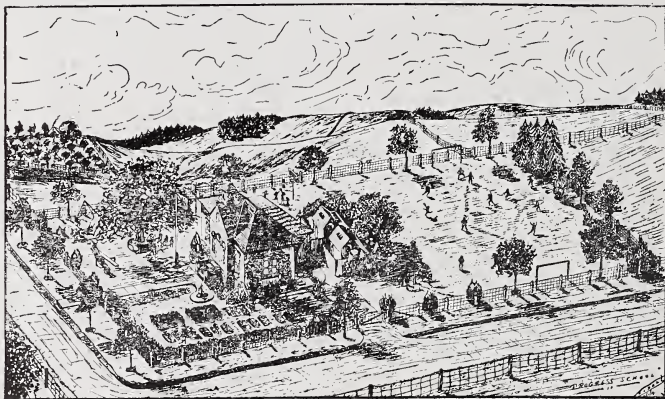
In the picture of the ideal one-teacher country school, one-half of the school grounds is represented as affording adequate playing room for the boys—baseball or football. At one side of the school house there is room for the older girls' tennis, croquet or basket ball. At one side of the front there are sand box, teeter and

which is much needed in many of the rural districts of Ontario.

THE SCHOOL GARDEN.

Form.—By many a proper school garden is considered to be a well arranged series of little plots with a more or less uniform assortment of flowers and vegetables grown by the pupils in the different classes. Such an arrangement undoubtedly may provide a good school garden and especially for the first year's effort.

Against such a plan, however, there are objections. It is not like an ordinary garden that may be found



AN IDEAL COUNTRY SCHOOL.

swing for the young children. At the corner of the school grounds nearest the corner of the roads the experimental plots are located. The flower beds, vines, boulevard and shrubs are set out and cared for as they might be at a well kept farm house. The teacher, pupils and community co-operate in making the school a home-like beauty spot for the neighbourhood. The playing facilities are for the young people too as well as for the pupils.

It is not to be inferred that the one-teacher school is considered preferable to the consolidated school

at the homes. It is not like a garden which the pupil will plan for himself when he grows up. It is difficult to lay out and manage. There is much waste of ground in paths and these require a great deal of attention. It cannot be carried out unless there is a larger or smaller open space in one plot. It does not appeal to practical farmers as being sensible. It is too narrow in its conception.

Location.—The school garden should not be located in an out-of-the-way place on the school grounds. If possible, it should be at the front or side of the school house and

within full view of passers-by on the road. If space cannot be taken from the school grounds for it, it may be carried on in nearby grounds or in a neighbour's field. Good work might be done in taking charge of the garden of some one living near the school as a loan or on a rental basis.

Equipment.—The amount of equipment for carrying on garden work at school is not specified. At some schools, all the work is carried on with tools brought from the pupils' homes. There are some advantages in this plan for the first year's effort.

mental plots in a school garden qualifying for grants is exclusive of paths. It is suggested that as a rule three square rods should be given to experiments or demonstrations on field crops, and three square rods devoted to experiments or demonstrations on vegetables, plant propagation, etc. The interests of the locality, however, will be the best guide in selecting experiments, and in some cases it may be considered best to give all the space to field crops, or, on the other hand, to vegetables.

The space devoted to flower-



S. S. NO. 1, SARNIA TOWNSHIP, LAMBTON COUNTY, ONT.

The garden at this school shows what is aimed at. A Township Educational Association was organized at this school.

For an average school six rakes, six hoes, one digging fork, one shovel, a pronged trowel, two watering cans, a wheel barrow, one mallet, a plentiful supply of garden lines and corner stakes, a hammer and saw will likely suffice. This outfit will cost about \$12.00. Grass shears, a sickle and a lawn mower will increase this amount by about \$6.00. At odd times a few extra tools may have to be borrowed.

The tools should be put under the charge of a tool officer or garden committee of the pupils.

Uses of area specified for school garden.—The six square rods specified as the minimum area for the experi-

growing can hardly be specified, as it will, be best to grow the flowers in beds or borders along the walks, around the experimental plots, or about the school house and fences. In a school of twenty-five pupils however, an area equal to at least one square rod should be given to flowers. For the smaller pupils, in either home or school garden work, small plots containing easily grown flowers or vegetables or both may well be encouraged. For the older pupils there are advantages in having the work done under conditions similar to those they will meet in actual life.

In the School Garden that should be aimed at for every Ontario school two features should be kept clearly in mind.

First: The garden should contain from year to year a few well planted and well conducted experiments and demonstrations on fruits, vegetables or field crops of interest and value to the whole neighbourhood. This part of the garden will constitute a small "experimental farm" for every school section, full of valuable lessons in agriculture.

In it the older pupils of the school, while being trained to "do something in order that they may learn something," will be trained also to co-operate for public service. The things they do will be for the benefit of all.

Secondly: The garden, *i.e.*, the school grounds, should contain neat grass plots, flower beds and borders for the purpose of training children to care for tidy surroundings, to grow flowers and also to make the school premises attractive as the local "beauty spot."

The garden work should be planned to develop a consistent and progressive series of studies from year to year, and not allowed to become a matter of aimless repetition; pupils should advance into more difficult work just as they do in arithmetic or other school studies. The interests of the locality should be considered in selecting the work. Teachers should leave records of the work they have carried out for the guidance of their successors, and as a permanent history of the teaching of agriculture in the school section.

A Community Garden.—The experiments and demonstrations that are carried out in the school garden should be made widely known throughout the neighbourhood. The pupils who are conducting the work should be led to think of their work as being for the benefit of the community as well as for themselves and their school. Surplus garden produce should not be wasted or selfishly

distributed; as a "community garden" everyone should share in its gifts. Plans for the garden work of the following season might be considered by the ratepayers at the annual school meeting. Trustees or other interested persons should be encouraged to conduct experiments in the school garden. Boys or girls who have left school might undertake some of the experiments also. In a school where there are only a few pupils in the senior classes, this plan will enable a teacher to secure help and experiments for the six square rods required.

Instead of having the pupils carry out the work in small separated plots, teachers are quite free to plan the garden along the lines of a farmer's home garden: *it is not the form or style of the garden that is of first consideration.* This plan does not prevent the pupils from making the work experimental. Everything done in the garden should have a *purpose*.

Flower growing.—The aim in the flower growing side of the garden work should be to make the school like a beautiful home. It will be best carried out in flower borders and beds suitably arranged alongside the walks or about the school house and fences, just as it might be at the pupil's home. Work in caring for the vines and shrubbery, the hanging baskets, the window boxes, the perennial border, the wild flower plot, the lawn, the paths, the roadside in front of the school may be all considered properly school garden work.

Care of grass plots.—In considering the care of a school lawn, *i.e.*, the grass plots, as part of the school garden work, it is not intended that the entire school grounds are to be kept by the pupils as a lawn, but rather that at the front of the school and around the flower beds and experimental plots, neat grass plots should be in evidence. School ground improvement schemes might be planned to cover a series of years, each year

adding an additional area to the improved area.

Summer Holiday care.—The summer holiday care of a school garden that is planned and conducted along proper educational lines must not degenerate into a caretaker's job. The school garden is for the education of children and indirectly for the people of the neighbourhood; if it has not meaning enough and educational purposes enough in it to secure voluntary good care from pupils and parents, it has no right to exist.

There may be some work in the garden not connected directly with the pupils' plots for which payment will have to be made. For such work arrangements should be made wherever possible with some of the pupils for a small allowance. A few dollars should cover all the expenses of caring for the garden during the holidays at any school.

In no case should pupils be paid to look after their own plots.

A School Progress Club.—The work carried out by the pupils in home gardens may be put largely under the management of the children themselves, organized as a *School Progress Club*. Under this scheme the Club may arrange for experiments for its members, undertake a large share of the inspection of the plots and carry out plans for papers and discussions on the work at the Friday afternoon meetings of the Club.

The teacher's chief office will be to encourage and direct the work.

The work carried out in the garden at school may be managed in this way also to the advantage of the work and the pupils.

The immediate commencement of the work is not to be desired so much as a favourable commencement. It is the continuance of the work and not the commencement that should be considered chiefly. It should not be undertaken without carefully planning. It is very desirable that the teacher undertaking the work should remain throughout the calendar year, and that he or she should have the active co-operation of the trustees. If a teacher who is leaving his or her school at summer holidays knows with some certainty that the trustees and ratepayers will endeavour to have the work continued under the new teacher, there may be justification in such cases for a commencement being made. Without such assurance, it will be better not to make a start.

Home Supervision of Gardens.—Teachers should arrange to see the pupils' work at least twice during the season. The visit to the pupils' homes will present opportunities for talking over matters with the parents on other matters besides agriculture. The chief values that will come from supervision will lie in the encouragement given the pupil and the prevention of carelessness.

MANITOBA.

BY H. W. WATSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

FOR more than a generation school gardens have been compulsory in many European countries. They were introduced to give an impetus, an inspiration to improved scientific methods of horticulture and agriculture. The objects sought were largely economic,

namely, the introduction of more profitable methods in the cultivation of grains, vegetables, fruit and flowers.

In America, the school garden movement is rapidly gaining in popularity in the minds of all educators. The objects here are similar to those in Europe, but we have an

additional purpose of encouraging the bright, intelligent, ambitious boys to remain on the farm. The great rural school problem of Canada is:—"How shall we save the country boy from the allurements of the city and make him contented with life on the farm?"

Through the school garden the ambitious boy will see that successful farming requires as good an education and the exercise of his brains to as great an extent as any other occupation, in fact more than most. The boy will realize that rural life is the normal life—the best life—and that farming is the most aristocratic occupation in this great agricultural country.

Farming must become more intensive, scientific, and diversified, and it is from the rising generation, properly educated, that we must expect results.

From the communion with Nature associated with the gardens, children will learn to love the forests, streams, hills and glades, and be content to live there, nay more, will long to return should circumstances compel them to leave. Children will gain self-confidence, self-respect, and self-reliance from the realization that they actually own something that they themselves have actually produced. In the cultivation of a plot in the garden arises certain problems of soil, drainage, pests, rotation of crops, etc., on the one hand, but in addition the obeying of laws, the working together for a common end, the taking of failure and making success of it, and not least of all, the generous acknowledgement of each other's success.

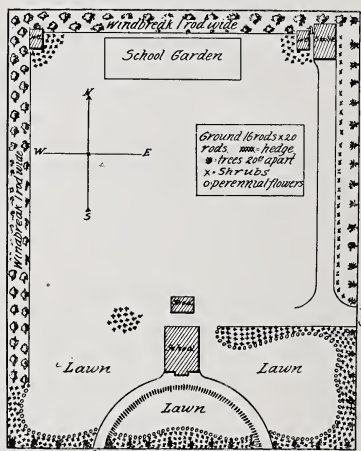
The children's gardens at school, properly kept, have been an inspiration for greater home improvement. No school activity will influence the home so effectively and permanently as that of school gardening.

WHAT SCHOOL GARDENING INCLUDES.

The nature and scope of gardening

possible in a school will largely depend upon conditions. In some schools, it may be difficult to go farther than indoor culture and window-boxes.

The above lay-out and improvement should be made a possibility at every school in city, town or country. The ground should be large enough to admit of developing equally the æsthetic, mental and physical nature of the child. The beautifying of the school grounds should receive first attention, especially as this appeals most readily to younger children.



TWO-ACRE SCHOOL GROUND PLANNED FOR SCHOOL GARDENING.

The fences and gates may require repair, the walk to be improved, the wood to be piled neatly, the ground to be levelled and cleaned off.

Shelter belts of trees should be planted on the north and west sides; a row of shade trees on the south and east; clumps of shrubbery in the corners, along the front and around outhouses. Hedges should be set, climbers planted, and perennial roots established around the borders of the lawn.

For the proper planting of all this permanent material, at least two years' thorough cultivation of the

ground is necessary. While this ground is being prepared, it may be utilized by the children in the growing of potatoes, corn, carrots, beets, etc., and there is no better means of preparation.

Then follows the planting of this permanent material and its subsequent care and cultivation, in which the children should always participate and perform all work of which they are capable. The borders, hedges and lawns will require a certain amount of care and cultivation continually, but an opportunity should be given the individual pupils, and this can be done best in experimental plots at the rear of the grounds.



A PERENNIAL BORDER ALONG THE SIDE OF A RURAL SCHOOL GROUND.

ESSENTIAL FEATURES IN BEGINNING.

1. A desire on the part of the teacher to do *something*.
2. A definite plan to follow towards a completed whole.
3. Start at the beginning, the bottom, so that later developments may be possible and successful.
4. Make each improvement a definite and permanent one, so that other teachers following may have something upon which to continue the work.
5. Keep the garden work at all times in as good condition as the best-kept note book of work inside.
6. Before leaving for vacation, make certain that the gardens will be properly cared for until school re-opens.

FEATURES TO AVOID IN BEGINNING.

1. Do not attempt too much, but do well.
2. Do not use too great variety in trees, shrubs, vegetables or flowers; use only varieties that are sure to succeed.
3. Do not be discouraged over failures, learning to turn present failures into future successes will be of great educational value.

BRITISH COLUMBIA.

BY J. W. GIBSON, M.A., DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION.

THEORETICALLY there is a 'best' school garden for every school, a 'best' school garden for every district and no doubt a 'best' school garden for every teacher, but as yet few if any have seen it. So many factors enter into the organization and use of school gardens that it would be an utter impossibility to include all in any one school garden. Some teachers have attempted to include everything that they have ever heard of, thought of or read

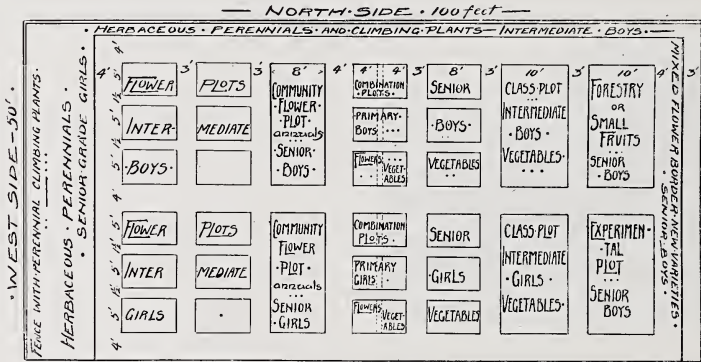
about in one school garden with the result that the very complexity of it made efficiency in management and use impossible. Such a garden must sooner or later become the cause of considerable worry on the part of both teachers and pupils which too frequently ends in apathy and neglect on the part of the pupils and distraction and discouragement on the part of the teacher. Some teachers who have not had any experience in school gardening and who have given

it no serious consideration at any time may perchance have seen or even heard of a garden established by some other teacher. Forthwith she determines to have a school garden and acquaints her pupils with her decision. Now it is doubtless worth while simply to "have a school garden" just as it is worth while for people who read very little to have a library, but a garden in the school grounds is far from being the ideal in school gardening.

We must shift the emphasis from the garden to the gardeners. Everything we undertake must have behind or beyond it a purpose. It must be done in the interests of the pupils

work of the school. Finally it will be the "best" garden for the teacher to have if by means of it she becomes more thoroughly acquainted with her pupils individually, is able to enter into their lives with more earnest sympathy and able to utilize this new interest to the advantage of the rest of the work of the school.

The use that is to be made of the garden in the teacher's scheme of education may be a determining factor with reference to size and location. If it is for the growing of flowers for decorative effect the garden may take the form of perennial and annual flower borders or plots so placed in the grounds as to look



Plan of School Garden for ungraded School of 30 to 40 pupils - Individual and Community Plots.

A SCHOOL GARDEN PLANNED BY J. W. GIBSON, DIRECTOR ELEMENTARY AGRICULTURAL EDUCATION FOR BRITISH COLUMBIA.

and of the community. It will be the "best" school garden if it gives boys and girls a new interest in the things of nature which environ them, if it creates within them a desire to investigate in order to understand and appreciate that environment, and finally if it increases their ability to control and to improve that part of nature with which they have to do. It will deserve the name of "best" if it leads boys and girls to take a greater interest in Agriculture as practised in their own home districts and if, on the other hand, it leads parents to take a new interest in the

best. This will not require a large area and might be established in any school ground however small. Such a scheme should be supplemented by window boxes for the growing of flowers. In this kind of gardening the teacher and pupils should consider such points as grouping and mass effects, colour schemes, time and duration of flowering, height, flowering or foliage habit and design. If the work is chiefly experimental as regards varieties and methods of cultivation it is best to make use of simple rectangular plots and straight rows all arranged in a simple garden

in a safe and convenient part of the grounds. These flower plots may be of two kinds—(1) individual plots and (2) community plots, the latter being four or five times as large as the former and operated by a group of children. Flower borders may also be operated as community plots in the school grounds. When the cultivation of vegetables is included as it should be in most school gardens, both individual and community ownership should be used. Individual plots for pupils in primary classes might be as small as 4 x 5 feet, or two pupils may be given a 5 x 8 foot plot together, in which case they invariably divide it into two, each claiming his part. In arranging plots for primary classes it is usually best to allow them to devote part of their plot to flowers and the rest to vegetables. All such combination plots should be grouped together in one section of the garden however. Flower plots look best when kept separate from the vegetable plots.

Class plots should be larger and used for the growing of larger crops such as corn, peas, potatoes, tomatoes, cabbage, etc. From two to six pupils may own and operate a class plot. These plots should be from 15 feet to 20 feet square. One rod square is sometimes desirable as it makes computation per acre very easy. These large plots may also be used as agricultural experimental plots, although all plots are in a sense experimental. It is not possible to include many such plots unless the area allotted to school gardening is fairly large. Of course community plots may be used in any grade and for either boys or girls whereas the large plots for agricultural experimentation are most suitable for boys of senior grade.

In fruit growing districts it is desirable to have a small plantation of bush fruits. Fruit trees require so much room that they cannot be included in most school grounds in orchard arrangement, but it is desirable that a few trees be included in

some part of the grounds outside the garden proper.

A small area should be spared in every school garden for growing trees from seed. This little tree nursery may not be larger than 10 feet square but will serve to interest boys and girls in the great work of tree growing and transplanting. This small beginning may lead to a more intelligent interest on the part of the pupils in the science of Forestry and in most cases the trees grown can be used to advantage for planting either in the school grounds or at the homes of the children.

Herbaceous perennials should be grown in every school garden or in the school grounds for ornamental purposes. Vines, both annual and perennial, should also be grown in suitable places in the grounds for ornamentation or for screening out-buildings, ugly fences or rock piles.

We have now alluded to most of the essentials both as to the purposes or educational value of the school garden and as to the make up of the garden itself. An important question still remains, viz., how many of those features already mentioned might reasonably be included in one garden? It is not possible to make a plan which would suit more than one set of conditions and say that even that was a "Model Garden." City schools and city grounds present many problems that do not arise in connection with country schools. Graded schools will require gardens somewhat different from those of ungraded schools. Of the two, the latter usually presents the greater difficulty. The plan submitted is for an ungraded rural school of from 30 to 40 pupils. The writer makes no claim that this is a "model" school garden even within the limits of the conditions stated but he has found everything suggested therein not only entirely practicable but also quite successful even according to those standards of success which were mentioned at the commencement of this article.

PART IV.

Special Contributions, Reports of Agricultural Organizations, Notes and Publications.

PATRIOTISM AND PRODUCTION.

A leaflet advertising Agricultural Conferences in Northumberland County, Ontario, shows in colours, on the front page, a facsimile of the "Scrap of Paper" which bears the signatures of the officials who signed the treaty. Following is the printing on the front and back pages of the leaflet:

FRONT PAGE.

THE "SCRAP OF PAPER"— BRITAIN'S BOND.

"Belgium.....shall form an independent and perpetually neutral State. It shall be bound to observe such neutrality towards all other States."

(FAC-SIMILE OF SIGNATURES AND SEALS.)

Signatures attached to Treaty of

1839 guaranteeing the independence and neutrality of Belgium.

GREAT BRITAIN,	Palmerston.
BELGIUM,	Sylvain Van de Weyer.
AUSTRIA,	Senfft.
FRANCE,	H. Sebastiani.
PRUSSIA,	Bulow.
RUSSIA,	Pozzo Di Borgo.

BACK PAGE.

THIS MEANS YOU.

Do YOU Know:

- (1) That CANADA is at War?
- (2) That EVERYONE in Canada has a DUTY?
- (3) That BRITAIN and her ALLIES need FOOD?
- (4) That the FOOD AVAILABLE for those fighting in the trenches depends upon the production of YOUR farm?

GROWING FOOD ON VACANT LOTS.

IN the February number of THE AGRICULTURAL GAZETTE, there was published, on page 183, a brief article describing the steps taken in the city of Regina towards utilizing the vacant lots of the city for the production of garden crops. Similar comprehensive schemes, as are being worked out in other cities, are outlined in the following letters:—

WM. FOREMAN, CHAIRMAN CONSERVATION COMMITTEE, CHATHAM, ONT.

From the standpoint of Civic Beautification, rather than economic or increased production, we have endeavoured to interest organizations such as the Boy Scouts, Girl Guides and school classes, in the cultivation of vacant lots, but without success.

The City has some vacant lots on its hands that were offered for sale for taxes.

These have been cultivated by people who have had the use of the lots for the cultivating of them.

S. H. KENT, CITY CLERK, HAMILTON,
ONTARIO.

We have formed in this City a Garden Club, having for its object the cultivation of vacant lots. The Club is managed by a committee composed of the Mayor, City Clerk, two members of the Council and three citizens. We propose to secure for those citizens so desiring, the free use of lots. The committee will have the lots prepared for planting. The members of the Club will pay \$1.50 which will pay the expenses of preparation of land. The members will be required to purchase their own seed, the seed to be selected by the Committee of Management.

I append herewith the rules governing the Club membership.

Each member shall accept and diligently cultivate such portion of land as may be allotted to him by the Committee of Management.

Each member shall plant such vegetables or seeds only as the Committee of Management shall deem best adapted to the character of the soil allotted to the member. The member shall be entitled to have for his own use the full yield of the land allotted to him without any deduction whatever.

Should any member, in the opinion of the Committee of Management, neglect to properly plant, cultivate and care for the parcel of land allotted to him, he shall immediately forfeit all right to the use of such land without recompense for any work done or any money expended thereon.

The Committee of Management shall be under no liability for any damage or loss sustained by any member of the club, and shall be under no obligation to allot lands other than such as may be voluntarily placed at its disposal for the purposes of the Club.

H. BROWN, CITY CLERK, BRANDON,
MANITOBA.

The question of utilizing the vacant lots in the city of Brandon, for the growing of garden crops, during the coming year, has been partially discussed, both by the Brandon City Council, and the Brandon Horticultural Society. The latter Society will, in the near future, request the Council to use the City teams for the breaking up of the various properties, which may be turned over to us for the season, and it is proposed that the Society shall adopt regulations, and maintain a general supervision of the work.

ALEXANDER CALHOUN, CHAIRMAN
VACANT LOTS GARDEN CLUB, CALGARY,
ALBERTA.

A Vacant Lots Garden Club was formed in Calgary a year ago. In the season of 1914, 250 twenty-five foot city lots were cultivated by 174 gardeners who paid \$1.00 per lot cultivation charges. The land was furnished free by the owners. Marked success attended the movement and probably \$5,000 worth of produce was grown, though this is a very conservative estimate.

We are planning for much larger things in 1915 and shall probably have, at least, four times as much under cultivation. The fees have been raised to \$1.50 per lot. We aim to cover the cost of cultivation.

The city is looking after this through its Parks Department and is ready to meet a proportion of the office and administrative expenses.

We are also confronted this year with the necessity of cultivating lots and furnishing free seed for people who are not in a position to pay. We hope to collect the money by harvest time or accept payment in kind.

R. S. MCKENZIE, SECRETARY PROPERTY
OWNERS' ASSOCIATION, EDMONTON,
ALBERTA.

The Edmonton Property Owners' Association have decided to give the use of their vacant property free for the year 1915 to anyone who wishes to use same for gardening purposes. So far we have allotted over two hundred lots, besides several acreage pieces. The members of our association have given me for allotment some three hundred and twenty-five lots so far, and I expect that I will have many more as our membership is growing very rapidly.

HERBERT CUTHBERT, INDUSTRIAL AND
PUBLICITY COMMISSIONER, VICTORIA, B.C.

The Victoria and Island Development Association inaugurated a movement some three or four months ago, with the object of supplying vacant lots to those who were unemployed or to others who wished to utilize them for the purpose of cultivating to raise vegetables for themselves, their families and friends.

A bill was issued in an endeavour to create an interest in this movement. It was not so successful as we anticipated at the start, but at the same time it was instrumental in inducing quite a number of people, even apart from this Association, to make their own arrangements with owners of vacant lots for this purpose. Others have taken advantage of our offer

to assist them and we have procured for them quite a number of vacant lots, which they are now engaged in cultivating.

This Association, about the same time, inaugurated a Public Market, to afford facilities for these people and those who are cultivating small patches of land around the City, to dispose of their produce. I am glad to say that this has been a great success. The market has become an established institution and has proved of the greatest benefit to the class of people for whom it was established. The result is that even apart from the vacant lot movement, the small producers have been able to find an outlet for their produce, poultry, pork, lamb, veal, fruits and flowers, for which they have been able to get ready cash. The result is that most of them will put into cultivation from twice to three times the amount of land they worked last year. We believe that we have started something which will be of the greatest possible importance to the city and district as a whole in future years.

We are now taking up with the Honourable, the Minister of Agriculture in Ottawa, several other matters of an agricultural nature, such as the importation of Angora Goats to Vancouver Island, the encouragement of the growing of flower and vegetable seeds, which we hope will also add very greatly to the area of land cultivated and to the increase of agricultural products.

The following competition is being conducted by the Victoria and Island Development Association:—

In order to encourage those who are now out of work and others, to take up vacant city lots and to cultivate them for the purpose of raising more vegetables for their own use and public consumption, the Victoria and Island Development Association offers to cultivators of vacant lots in the city of Victoria eleven prizes for the best cultivated lots, as follows:—1st prize, \$40; 2nd prize, \$30; 3rd prize, \$20; 4th prize, \$15; six prizes at \$10 each, one prize at \$5; while the Department of Agriculture of the Provincial Government offers \$100 in special prizes.

RULES OF COMPETITION GOVERNING THE AWARDING OF THE GENERAL PRIZES.

1. The competition will be open to amateurs only.

2. Any resident upon taking up a vacant lot and registering with the Victoria and Island Development Association as a competitor, may enter the competition.

3. The Association will place such lots as are now listed with them for this purpose, at the disposal of the applicants, and if these are not suitable will endeavour to secure such other lot or lots as competitors may desire.

4. There must be at least 25 entries on the first day of January, 1915, to insure the full complement of prizes being given, otherwise the number may be reduced in proportion to the number of competitors.

5. The gardens shall not be smaller than 4,000 square feet.

6. The Association will secure the plowing of competitors' lots at a charge not to exceed \$2.00, if sufficient entries are received to make this possible.

7. The Association will endeavour to arrange for general instructions to competitors to be given at meetings held for the purpose. Circular No. 4, of the Department of Agriculture, on "Gardening on a City Lot," may be had free on application.

8. Judging will be done at three suitable times during the season, by judges secured by the Association. The following score of points shall be used:—

Arrangement and laying out.....	15
Cultivation: Preparation of soil, fertilizers, cultivation.....	20
Cleanliness: Weeds, insects, diseases, blemishes.....	10
Attractiveness: To include flowers...	15
Industry, enterprise, skill, etc.....	20
Product-range of season, and variety, quality and quantity.....	20
Total.....	100

9. The score of any competitor not using skilled help will be increased 10 per cent. The score of gardens in the first year of cultivation, from sod or cleared, will be increased 10 per cent.

The following special prizes will be awarded by the Department of Agriculture of the Provincial Government: For the most attractive lot from the standpoint of civic improvement: 1st, \$16; 2nd, \$14; 3rd, \$10. For most productive lot, value of products to be considered and owner to keep accurate record of dates of harvesting and market prices, the lots to be scored on this basis at time of judging: 1st, \$25; 2nd, \$20; 3rd, \$15.

SEED IMPROVEMENT IN PRINCE EDWARD ISLAND.*

BY J. A. CLARK, B.S.A., SUPERINTENDENT CHARLOTTETOWN EXPERIMENT STATION.

CLIMATIC conditions that are favourable to the full development of a plant are conducive to the rapid improvement of that plant and Prince Edward Island seems to be particularly adapted for developing first quality seed grain. Under such conditions the simple method of mass selection from a seed plot has resulted in quickly improving varieties. Mass selection is the picking of heads which the grower considers are on the best plants in his field, and using the seed from them as parents for future crops. This method is quite an improvement over the fanning mill selection. Another method starts with the individual mother plant which may be obtained by the individual selection of one plant out of thousands or by careful plant breeding and selection. The seed from the individual mother plant is then multiplied and distributed. This method, being difficult and expensive, has been carried on by the Cerealists and Cereal Husbandmen at the Experimental Farms and Stations, and at the Agricultural Colleges throughout Canada and the United States. By this method some of the difficulties in the way of further improvement by mass selection were overcome.

WHERE TO OBTAIN FOUNDATION STOCK.

It is an interesting fact that almost all of the foundation stock of the seed grown by the members of the Canadian Seed Growers' Association in Prince Edward Island was obtained either directly or indirectly from the Central Experimental Farm at Ottawa. Foundation stock of oats in 4 lb. lots can be obtained free from the Central Experimental Farm on application, or it can be purchased in larger quantities from the multiplying plots at any of the Experimental Stations.

VARIETIES.

The Experimental Station tests many varieties of cereals. It is the place for such tests. I think it a good place also for the growers to send samples of their grain for comparison and examination. We are prepared to give all the help we can to the growers of pure seed. If they could visit the Station when grain was ripening, many valuable lessons regarding varieties could be learned at that time about the habits of the different sorts and strains. I believe it is in the interests of seed improvement that the numbers of varieties grown generally be reduced and that seed centres be organized where only one variety is grown in a locality.

OATS.

A variety rarely stands at the head of the list more than one year, yet certain varieties are leaders. At the present time at the Charlottetown Station, Victory (a Swedish oat) is a leader, Banner, Gold Rain, Lincoln, Old Island Black and Ligowo follow it closely. Co-operative work was undertaken in the spring of 1912 by the Superintendent of the Charlottetown Station, the seed inspector and a number of careful farmers in Kings and Queens counties to determine which of the three leading types of oats were best suited to certain localities. Banner, Ligowo and Old Island Black were the varieties chosen. Each variety was sown in duplicate each year on a number of different farms. Equal portions of the best seed obtainable of the different varieties were sent out by the Charlottetown Experimental Station each spring. The product was returned in the autumn when it was threshed by the station staff at Charlottetown with one exception. On one occasion the superintendent was present at the threshing and weighing of the plots on one farm. The results of three years observations are here given:

Variety.	Banner.		Old Island Black.		Ligowo.	
	Bus.	Lb.	Bus.	Lb.	Bus.	Lb.
Average yield per acre from 12 plots of each variety in 1912.....	55	24	49	6½	46	27½
Average yield per acre from 8 plots of each variety in 1913.....	66	31	62	12	58	22
Average yield per acre from 6 plots of each variety in 1914.....	70	28	58	11	56	20
Grand average yield per acre from 26 plots of each variety, 1912-14.....	62	21 2/3	55	12	52	24½

*Summary of paper read before Nova Scotia Seed Growers' Association, January, 1915.

From the foregoing data it will be seen that Banner has each year proved to be more productive than the oats representing the two other types tested and during the three seasons it has produced on an average 7 bushels and 10 pounds per acre more grain than Old Island Black, and 9 bushels and 31 pounds more grain per acre than Ligowo. It was generally believed that Ligowo was better suited to most of the localities than Banner before the co-operative work began. Banner oats has never led the list any year at the Charlottetown Station but it has always been well up in the list. This oat is popular and is highly recommended both on account of its good qualities and because of the demand for it for seed purposes on Prince Edward Island and in the neighbouring provinces. Old Island Black is a variety that has been developed in the province. It has a thinner hull than Banner. It is probably due to the excellent qualities of this oat that black oats still continue to bring 2c. more per bushel than white in most of the Maritime markets. Its chief failing is the weakness of its straw as it is likely to lodge badly on rich land.

SPRING WHEAT.

Chelsea, which has rather poor milling qualities, has twice led the list of spring wheat. Early Red Fife, Stanley, Marquis, White Russian are leading at this Station. Marquis has been tested on farms in many sections and has everywhere made good.

BARLEY.

Old Island Two-rowed (English Chevalier) has led for two years at Charlottetown over all sorts. It has several favourable characters one being that it drops most of its awns in the field. This year three Swedish barleys were next in yield, namely: Gold, Hannchen and Swedish Chevalier, the average yield of these being over 75 bushels per acre. Gold is a very promising two-rowed variety.

PEAS.

Solo, Arthur and Golden Vine are the varieties that we are now growing. The Arthur is a large white pea and is highly recommended.

CLOVERS AND GRASS SEEDS.

There is a great field for individual work in improving timothy, the grasses,

clover and alfalfa seed which in the past have been much neglected. It was thought that timothy was just timothy. Now we know that there have already been many strains selected out of the common sort and there are great possibilities in the improvement of this sort. We will begin to make real headway in the growing of alfalfa as soon as we begin raising our own seed.

FARM OPERATIONS IN THE PRODUCTION OF SEED.

A good site should be chosen for the seed plot and multiplying field. It is well to have the manure applied the previous year on roots. The ground should be brought to a good tilth by thorough cultivation as early in the season as possible. The seed grain after being treated with formalin should be sown as soon as it will feed right in the seeder or drill, allowance being made for the swelling of the grain by the fungicide.

Seed grain should be rogued and all noxious weeds and foreign grain removed from the standing crop. It should be allowed to ripen well before cutting and should be dry as shot before being stored in the barn. Great care should be taken in threshing, cleaning and storing so as to avoid impurities. This is much easier done if only one variety of each grain is grown and fed on the farm.

TO SUM UP.

Seed grain of the very first quality is being produced in Prince Edward Island. By improved farm methods and selection of seed oats the average yield per acre for the whole province has been doubled in 24 years. By thorough, clean cultivation and the use of only first quality seed of the very best sorts the yield can be greatly increased throughout the Province. An indication of the possibilities of oat culture was shown by the average yield of the 10 best plots at the Experimental Station at Charlottetown in 1914, which was at the rate of 116 bushels and 29 pounds per acre. There is an ever increasing demand in Nova Scotia, New Brunswick, Quebec and Ontario for the very best seed oats we can produce. By the methods suggested we can maintain our stock as at present or increase it and still have sufficient to yield a large income from the surplus sent to the other provinces for seed purposes.

COTTON VERSUS GLASS.

UNDER the heading "Growing Food on Vacant Lots," on page 183 of THE AGRICULTURAL GAZETTE for February the following statement appears: "We have decided to recommend all our gardeners who use hotbeds and coldframes to eschew glass and to use factory cotton instead. It costs less, does not grow so hot during the day nor so cool at night. The plants get more air and are in every way hardier and stand transplanting better." This has brought forth much discussion and the following expressions of opinion from a number of recognized authorities:

W. T. MACOUN, DOMINION HORTICULTURIST, CENTRAL EXPERIMENTAL FARM, OTTAWA.

Cotton is quite satisfactory to use instead of glass for hot beds and cold frame sashes in late spring when frosts are not severe, but for the early part of the season, when hot beds are started and even a little later on, in parts of the country where there is liable to be sudden severe frosts, I should not recommend the use of cotton. It is used considerably in the south eastern states, but for the Prairie Provinces it should be used with caution. Of course, if additional protection is given at night, by use of sacking or matched lumber protectors, it would be quite safe. As far as the plants growing under cotton is concerned, they do very well indeed.

F. W. BRODERICK, B.S.A., PROFESSOR OF HORTICULTURE, MANITOBA AGRICULTURAL COLLEGE.

Our experience in using cotton instead of glass on hot beds and cold frames does not agree with that of the writer from Regina.

I would say in the handling of hot beds and cold frames that the use of glass is essentially very practicable up to the middle of May, and although we use factory cotton to a considerable extent on the cold frames, it is only for the purpose of hardening plants over for a week or two before planting out.

In our western climate the night temperature is so much lower than the day temperature that the cotton does not provide sufficient protection for the most

tender plants which are growing in beds of this kind. I would say the only use to which cotton can be put is for a short period just before the time for planting out, which in this country is around the first of June.

T. G. BUNTING, B.S.A., PROFESSOR OF HORTICULTURE, MACDONALD COLLEGE, QUE.

We have used factory cotton for covering hot beds and cold frames and in its place it is quite satisfactory, but does not by any means take the place of glass, and I am of the opinion that the claims made for it in the article on page 183 of the February number of THE GAZETTE are too great. Cotton is used towards the end of the hot-bed and cold frame season when the weather is not too severe, and protects plants from the cold winds and the lighter frosts, etc., and it is often used in "hardening off" plants preparatory to setting them out in the field. During the daytime cotton would not be satisfactory for some crops such as Melons, Tomatoes and Radish, as it would give too much shade and as the cloth became dirty from dust and smoke, it would increase the shade considerably. Cotton has a place in gardening, but cannot replace glass entirely, except in the milder weather when only moderate protection is required.

It is just possible that the writer of the article used the cotton late in the season after the colder weather has passed, and under those conditions may have had success with it. We start our first hot beds as early as March 10th, some others start them earlier than this, and at that date cotton would not adequately protect the plants.

We have also used a heavy grade of "waxed" paper in place of glass, and although cheaper in its first cost it cannot replace glass as far as satisfaction is concerned and, of course, it is not nearly as permanent as the glass sash.

J. E. BRITTON, B.S.A., DEMONSTRATOR IN VEGETABLE GARDENING, ONTARIO AGRICULTURAL COLLEGE.

The main purpose of a hot bed is to keep a high and uniform temperature for the young growing plants. Plants such as tomatoes, peppers, melons, etc., require a temperature of 60° to 70°, while lettuce, cabbage, etc., will do best at 50° to 60°. In starting plants early while the weather is still cold, the heat is produced partly by the fermenting manure and partly received through the glass of the hot bed.

Sometimes double glass frames are used in order to keep a higher and more uniform temperature. However, the use of these double glass frames is not general with the commercial growers. Later in the spring and before setting the plants in the garden, we always harden them off in cold frames constructed practically the same as hot beds, but without the heating manure. These we cover with factory cotton tacked to large frames, which are removed during the day time. We have never practised rolling the cotton over the edge, but know it is found to be a very handy and successful method for covering the plants.

The method outlined in the article in the February GAZETTE would be more economical than using glass and should be just as satisfactory if not more so for growing plants late in the spring or in the early summer, but it would not be satisfactory for the very early plants. I can understand it being a very satisfactory practice in the West, where it is impossible to set plants out of doors at such an early date, and therefore it is necessary to grow them under protection until all danger of frost is passed.

JAMES ALLAN, SUPERINTENDENT HORTICULTURAL DEPARTMENT, AGRICULTURAL COLLEGE, TRURO, N.S.

Up to the present time, I have not used cotton goods for frame protection. Last spring we purchased some patent plant protection cloth, but unfortunately it arrived too late.

I have had an idea of putting this on to individual frames to take the place of sashes, but I do not believe that this is as good a plan as to tack the cloth to the upper side of the frame and use the roller at the lower end. In this part of the province we have exceedingly high winds, and in order to give this cloth a fair trial it would be necessary to have a well protected frame-yard, which I am in hopes of having this spring.

I have used this cotton cloth in the New England states, and have found it very satisfactory, and I believe that they use it very extensively in the truck-growing sections of Virginia. Of course the climate is entirely different from what it is here.

NOEL PELLETIER, DIRECTOR SCHOOL OF AGRICULTURE, STE. ANNE DE LA POCATIÈRE.

We have not tried to replace glass by cotton; however, we have made use of both. In the first place, I would say that all our hot beds are covered with glazed sashes.

We have used cotton to protect our plants in very cold nights. We used to put the cotton under the glass.

We also used cotton to protect the plants when the sun is very strong, when the sashes were removed, but in case of a heavy rain we used to put back the glazed sashes as I do not think cotton would protect the beds sufficiently in case of a heavy rainfall.

By following the above method, we have not had any trouble.

V. M. ATHANASE, OKA AGRICULTURAL INSTITUTE, LA TRAPPE, QUE.

The method described by Mr. Andrews of Regina, on page 183 of the February GAZETTE would not do for all cases. It may be useful for cold beds that are made at the end of April or the beginning of May, when the temperature has become sufficiently warm, but cotton will not afford sufficient protection against the cold for a hot bed that is made in March. It is necessary to make this distinction owing to the severity of our climate.

No one will deny that glass is cheaper than cotton. It is a fact also that it lets in more air, but it also lets in more cold. Three things are required for strong growth of plants: heat, light and air. Glass gives more light and more heat than any other substance. As to air, it is always easy to procure more by raising the sash, more or less.

The theory of Mr. Andrews would, in my opinion, be admissible only if cotton was a good conductor of heat and light. But it is quite the contrary. Cotton is often used to intercept both heat and light; it is important not to confuse hot beds with cold beds.

NORMAN M. ROSS, CHIEF OF TREE PLANTING DIVISION, FORESTRY BRANCH, INDIAN HEAD, SASK.

Under our conditions here I very much doubt whether hot-beds could be brought on successfully without the use of glass, at least in earlier stages. I have no doubt that the factory cotton would be all right for coldframes later in the season. There is always the difficulty, however, in this country of protecting frames from the heavy winds which we so frequently experience. I think that under the average conditions much difficulty would be experienced in handling cotton screens in general practice.

THE EASTERN ONTARIO PROVINCIAL SEED FAIR.

BY W. H. SMITH, B.S.A., DISTRICT REPRESENTATIVE, ATHENS, ONT.

THE first Eastern Ontario Provincial Seed Fair held at Brockville February 18th to 20th, 1915, was a decided success viewed from the point of number of entries and keenness of competition. While the attendance might have been larger, it was sufficient to justify the statement that this initial Fair at Brockville demonstrated conclusively that an essentially Seed Fair can be held, and that to really receive the benefit due them, it is necessary to have seed shown at a Seed Fair and not in conjunction with a live stock exhibition.

In the standing field crop competition there were 45 entries in the class for white oats, spring wheat had 6 entries, barley 3, peas 2, turnips 2, potatoes 3, dent corn 11, flint corn 5.

The general class was filled up well in all sections, the various classes of white oats having the greater number of entries, while 6-rowed barley and corn classes were also exceptionally well filled. There might have been a larger exhibit in the sections for Canadian Seed Growers grain, but what was there was of excellent quality.

At the auction sale of seeds held on Saturday prices were not exceptionally high. Fall wheat sold at \$3.50 for 2 bushel sack, spring wheat sold at from \$3 to \$4.25 per sack of 2 bushels, goose wheat \$4, banner oats ranged from \$1.90 to \$2.20 for 2 bushel sack, O.A.C. No. 72 oats sold as high as \$5 per sack, the average price being about \$3.25, white oats in the A.O.V. class sold at an average of \$4 per sack of 2 bushels, O.A.C. 21 barley sold as high as \$3.10 per sack an average of about \$3.80, field peas sold at \$4.20 per sack, and prize winning field beans sold at \$6 per sack, red clover at from \$13 to \$15 with timothy seed averaging about \$5, prize winning potatoes sold as high as \$2.10 per bag.

The lectures in the live stock judging tent on Friday were well attended, the large 40 x 60 tent being filled to its capacity. R. S. Stevenson of Ancaster conducted the classes in judging dairy cattle, while Prof. Geo. E. Day, of the Ontario Agricultural College, Guelph, demonstrated on classes of heavy draft horses. In the afternoon C. F. Bailey, Assistant Deputy Minister of

Agriculture for Ontario, took charge of the light horse class also conducted Friday afternoon. While the horse judging demonstrations were being conducted in the tent, Miss Gertrude Grey of Toronto conducted cooking demonstrations in Victoria Hall for the large number of farmers' wives who were in attendance.

In addition to the large amount of improved seed sold by auction at the sale of seed Saturday morning, the exhibitors showed to the farmers in attendance the advantage of good seed, and the contrast between properly prepared seed grain and poorly prepared seed grain.

Many of the people present had no idea that it was possible to grow such corn as was on exhibition at this Fair. The corn classes alone were an attraction to the farmers, while such men as A. S. Maynard of Chatham, Ed. Warwick, Blenheim, Alvin Oulette and Mr. Bigger of the Walker & Sons' Farm, J. O. Duke of Ruthven, by conversing with the farmers in attendance were able to convince them of the error of their way to almost as great an extent as did J. W. Noble with his exhibit from the Corn Growers' Association. Among other features of Mr. Noble's exhibit, were ears of the white standardized varieties, and a model of a specially prepared drying house similar to those used by the Growers in preparing their specially kiln dried seed corn. Another great feature of the Show was a miniature representation of Walker & Sons' large farm, and the egg marketing demonstration established by the Ottawa Department of Live Stock under the charge of Mr. Fee was of considerable interest to the majority of farmers and their wives. The wool exhibit from the Department of Agriculture, Ottawa, under the charge of Mr. Bent, attracted considerable attention.

The officers for the year 1915 were elected as follows:—

Honorary President—Mayor Donaldson, Brockville.

President—W. T. Hands, Perth.

Vice-President—George Bradley, Carletonby.

Secretary-Treasurer—Walter H. Smith, Athens.

WEED ACT OF ONTARIO.

A committee consisting of J. E. Howitt, Professor of Botany, Ontario Agricultural College, Guelph, Hon. Nelson Mon-

teith and Mr. W. J. Lennox, was appointed in 1914 by the Ontario Agricultural and Experimental Un on to make a study of the present Weed

Acts of the different provinces of Canada. This committee has proposed the following suggestions as to how the present Ontario Weed Act to prevent the spread of noxious weeds, might be made more effective.

1. By an organized effort upon the part of the Ontario Department of Agriculture, through the agency of farmers' clubs, farmers' institutes and the district representatives of the Department of Agriculture, to make the farmers of Ontario acquainted with the provisions and regulations of the Ontario Act to Prevent the Spread of Noxious Weeds.

2. By amending the present Act so as to make it compulsory for every township council to appoint an inspector whose duty it shall be to see that the provisions of the Act relating to the destruction of weeds are carried out.

3. By the Ontario Government appointing county or district inspectors who shall supervise the work of the township inspectors, and report to the Government any neglect of duty upon the part of the said inspectors.

4. By extending the present Act so as to

prevent the following weeds maturing and ripening their seeds:

1. Wild Oats (*Avena fatua*).
2. Curled Dock (*Rumex crispus*).
3. Clustered Dock (*Rumex conglomeratus*).
4. Purple Cockle (*Agrostemma githago*).
5. False Flax (*Camelina sativa*).
6. Wild Mustard (*Brassica arvensis*).
7. Wild Carrot (*Daucus carota*).
8. Field Bindweed (*Convolvulus arvensis*).
9. Ribgrass (*Plantago lanceolata*).
10. Common Ragweed (*Ambrosia artemisiifolia*).
11. Ox-eye Daisy (*Chrysanthemum leucanthemum*).
12. Canada Thistle (*Cirsium arvense*).
13. Chicory (*Cichorium intybus*).
14. Perennial or Field Sow Thistle (*Sonchus arvensis*).
15. Burdock (*Arcetium minus*).
16. Wild Barley or Squirrel-tail (*Hordeum jubatum*), and all other weeds which upon the consent of the Minister of Agriculture, the council of any city, town, township or village may by by-law bring under the operation of this Act.

FOOD OR FEVER.

In the article on "Italy" in *The Agricultural War-Book*, page 39, this statement occurs: "The Campagna is being redeemed after a thousand years of noxious existence." The following is a review by *The London Lancet* of an article by Mr. L. Villari in *The Edinburgh Review*. There is something suggestive and instructive in it for Canadian agriculturists.

"The Campagna is a congeries of hummocks rising into hillocks, intersected by fossæ [ditches] either stagnant or dribbling their way into the Tiber. How is it that this should be the true description of an expanse of soil which was once famed for vegetative energy, and which, in response to cultivation, was covered with patrician residences and surrounded with gardens? How is it that a tract of country once a favoured health-resort should have degenerated into a fever preserve? Views of the origin of one of the most characteristic phases of the Campagna, its unhealthiness from 'malaria,' are gaining ground which imply that insect life, in some of its most pernicious developments, is not the *causa causans* of the 'malaria'

in question, but is itself a symptom of a deeper pathological coefficient without which the said insect life would cease to exist. Left derelict, or deprived of its proper treatment, the soil avenges itself by an unerring retribution. Wherever cultivation has done justice to the soil, the insect disappears, and with it the 'malarious' infection. To this Mr. Villari bears emphatic testimony, showing how the reclamation now in progress under Government is, precisely in those localities where it has been thoroughly practised, the prelude to the extinction of the insect (deprived of its pabulum), and, coincidentally with this, the disappearance of the 'malaria' and of the fever it induces. In other localities the State provision of quinin and wire gauze in the dwellings have had most salutary uses—the notable reduction of sickness. The appropriate utilization of the vegetative energy by scientific agriculture—in a word, the restoration of the Campagna to the salubrity and the amenity it enjoyed under the Antonines—such is the prospect to which Mr. Villari invites us."

SOCIETIES AND ASSOCIATIONS.

THE annual meetings of the various live stock and record associations with headquarters in Ontario were held in Toronto during the week beginning February 1st, 1915. The following are the officers of the associations for the year 1915:—

DOMINION SHORTHORN CATTLE BREEDERS' ASSOCIATION.

President, J. M. Gardhouse, Weston; first vice-president, W. A. Dryden, Brooklyn; second vice-president, J. F. Mitchell, Burlington; secretary-treasurer, H. M. Pettit, Freeman.

DOMINION CATTLE BREEDERS ASSOCIATION.

President, John Gardhouse, Weston; secretary, R. W. Wade, Toronto.

DOMINION SWINE BREEDERS' ASSOCIATION.

President, J. D. Brien, Ridgetown; vice-president, J. C. Stuart, Ottawa; secretary, R. W. Wade, Toronto.

DOMINION SHEEP BREEDERS ASSOCIATION.

President, Col. R. McEwen, Byron, Ont.; vice-president, J. Bryson, Brysonville, Ont.; secretary, R. W. Wade, Toronto.

CLYDESDALE HORSE ASSOCIATION OF CANADA.

President, John A. Boag, Queensville, Ont.; vice-president, William Graham, Claremont, Ont.; secretary, J. W. Wheaton, Toronto.

ONTARIO HORSE BREEDERS' ASSOCIATION.

President, W. Smith, M.P., Columbus, Ont.; vice-president, John A. Boag, Queensville; secretary, R. W. Wade, Toronto.

SHIRE HORSE BREEDERS' ASSOCIATION.

President, C. E. Porter, Appleby; vice-president, Amos Agar, Nashville; secretary, G. de W. Green, Toronto.

STANDARD BRED HORSE ASSOCIATION.

President, W. J. Cowan, Cannington, Ont.; vice-president, J. S. McCall, St. Thomas, Ont.; secretary-treasurer, J. W. Brant, Ottawa, Ont.

CANADIAN THOROUGHBRED HORSE SOCIETY.

President, Lieut.-Col. Hendrie, Hamilton; first vice-president, J. J. Dixon, Toronto; second vice-president, A. E. Dymont, Toronto; secretary-treasurer, T. J. McCabe, Toronto.

CANADIAN HACKNEY HORSE SOCIETY.

President, A. E. Yeager, Simcoe; vice-president, Harry Boag, Barrie; secretary, H. M. Robinson, Toronto.

CANADIAN PONY SOCIETY.

Honorary president, C. Lovejoy, Mimico; president, W. J. Langdon, Toronto; first vice-president, J. M. Gardhouse, Weston; second vice-president, Dr. Watson, Hudson Heights, Que.; secretary, G. de W. Green, Toronto.

HEREFORD CATTLE BREEDERS' ASSOCIATION.

President, L. O. Clifford, Oshawa, Ont.; vice-president, W. H. Hunter, Orangeville; secretary-treasurer, John W. Brant, Ottawa.

JERSEY CATTLE CLUB.

President, S. J. Lyons, Norval; first vice-president, D. O. Bull, Brampton; second vice-president, F. L. Green, Greenwood; secretary-treasurer, B. A. Bull, Brampton.

ONTARIO SHEEP BREEDERS' ASSOCIATION.

President, J. T. Gibson, Denfield; vice-president, J. W. Springsted, Abbingdon; secretary, R. W. Wade, Parliament Buildings, Toronto.

ONTARIO SWINE BREEDERS' ASSOCIATION.

President, Prof. Geo. E. Day, Guelph; vice-president, John I. Flatt, Hamilton; secretary, R. W. Wade, Toronto.

BERKSHIRE SWINE BREEDERS' ASSOCIATION.

President, H. M. Vanderlip, Cainsville; vice-president, Adam Thompson, Stratford; secretary, R. W. Wade, Toronto.

YORKSHIRE BREEDERS' SOCIETY.

President, Ken. Featherston, Streetsville; vice-president, J. C. Stuart, Ottawa; secretary-treasurer, R. W. Wade, Toronto.

RECORD COMMITTEE.

Wm. Smith, M.P., Columbus, chairman; Peter White, K.C., Pembroke, Representing Heavy Horses; Wm. F. Stephen, Huntingdon, Que., Dairy Cattle; Robert Miller, Stouffville, Beef Cattle; R. R. Ness, Howick, Que., Light Horses; J. M. Gardhouse, Weston, Sheep; J. E. Brethour, Burford, Swine, and Jno. W. Brant, Ottawa, Secretary-Treasurer.

THE HOLSTEIN FRIESIAN ASSOCIATION OF CANADA.

The officers of the Holstein Friesian Association of Canada for 1915 are as follows:—

President, Mr. D. C. Flatt, Hamilton, Ont.; first vice-president, Mr. M. L. Haley, Springfield, Ont.; second vice-president, Mr. J. W. Richardson, Caledonia, Ont.; third vice-president, Mr. N. Michener, Red Deer, Alta.; fourth vice-president, Mr. N. Sangster, Ormstown, Que.; secretary-treasurer, Mr. W. A. Clemons, St. George, Ont.

QUEBEC BRANCH.

The Quebec Branch of the Holstein Friesian Association of Canada, held its annual meeting at the Queen's Hotel, Montreal, on Tuesday, February 2nd, 1915.

The following members were elected officers for the ensuing year:—

Honorary Presidents, Hon. J. E. Caron, Minister of Agriculture, P.Q.; D. H. Brown Beith; J. E. K. Herrick, Abbotsford; L. de L. Harwood, M.D.; Vaudreuil, F. E. Came, St. Jean Baptiste de Rouville.

President, P. J. Salley, Lachine Rapids; first vice-president, Ogden Sweet, N. Sutton; second vice-president, Neil Sangster, Ormstown; third vice-president, Jos. Ferland, Sorel; fourth vice-president, R. A. Gillespie, Abbotsford.

ALBERTA BRANCH.

The Alberta Branch of the Holstein Friesian Association of Canada held its first annual meeting in Red Deer, Alberta, on December 29th, 1914. The following officers were elected for 1915:—

Honorary president, The Hon. Duncan Marshall, Minister of Agriculture; president, N. Michener, Red Deer, Alta.; first vice-president, Thos. Laycock, Calgary, Alta.; second vice-president, I. Bateman, Innisfail, Alta.; third vice-president, H. J. Smith, Clover Bar, Alta.; fourth vice-president, G. H. Hutton, Lacombe, Alta.

Secretary-treasurer, E. W. Bjorkeland, Red Deer, Alta.

THE BRITISH COLUMBIA STOCK BREEDERS' ASSOCIATION.

The ninth annual meeting of the British Columbia Stock Breeders' Association was held at Vancouver on January 26th, when the various reports of the year were given and the following officers were elected: Hon. president, Hon. T. W. Paterson; hon. vice-presidents, Mr. S. F. Tolmie and Mr. W. D. Scott; president, Mr. A. D. Patterson; vice-president, Mr. Sam Smith; secretary-treasurer, Prof. W. T. McDonald, Victoria; assistant secretary-treasurer, Mr. S. H. Hopkins.

THE BRITISH COLUMBIA DAIRYMEN'S ASSOCIATION.

The following are the officers of the British Columbia Dairymen's Association for the year 1915: Hon. president, Mr. A. C. Wells, Sardis; president, Mr. William Duncan, Courtenay; vice-president, Mr. E. A. Wells, Sardis; secretary-treasurer, Mr. H. Rive, Victoria.

LIVE STOCK ASSOCIATIONS IN QUEBEC.

The officers for 1915 of the General Stock Breeders' Association of the Province of Quebec and affiliated associations are as follows:—

Patrons, Honorable M. Burrell, Minister of Agriculture for Canada; Hon. J. E. Caron, Minister of Agriculture of the Province of Quebec. Honorary President, Mr. Robert Ness; president, Hon. N. Garneau, M.L.C., Quebec; first vice-president, Mr. Arsene Denis, St. Norbert Station; second vice-president, Mr. James Bryson, Brysonville; secretary, Dr. J. A. Couture, 49 Garden St., Quebec.

FRENCH CANADIAN CATTLE BREEDERS' ASSOCIATION.

President, Mr. Arsène Denis, St. Norbert Station (Berthier); vice-president, Mr. Géd. Garceau, Trois Rivières; secretary, Dr. J. A. Couture, 49 Garden Street, Quebec.

FRENCH CANADIAN HORSE BREEDERS' ASSOCIATION.

President, M. Joseph Deland, L'Adadie; vice-president, Victor Sylvestre, Clairvaux (Bagot); secretary, Dr. J. A. Couture, 49 Garden Street, Quebec.

NATIONAL SHEEP BREEDERS' ASSOCIATION.

President, Mr. Napoléon Lachapelle, St. Paul l'Ermite; vice-presidents, Messrs. James Bryson, Brysonville, Que., J. E. Dion, St. Sebastien; secretary, Dr. J. A. Couture, 49 Garden Street, Quebec.

THE UNITED FARMERS OF ALBERTA.

The officers of the United Farmers of Alberta for 1915 are as follows:—

Honorary president, D. W. Warner, Edmonton; president, James Speakman, Penhold; first vice-president, H. W. Wood, Carstairs; second vice-president, S. S. Dunham, Lethbridge; third vice-president, Rice Sheppard, Strathcona; fourth vice-president, W. D. Trego, Gleichen; secretary, P. P. Woodbridge, Calgary.

THE ONTARIO PLOWMEN'S ASSOCIATION.

The following are the officers elected at the annual meeting of the Ontario Plowmen's Association, held recently in Toronto:

Hon. President, Jas. Kilgour, Eglinton, past president, Jas. McLean, Richmond Hill; president, A. P. Pollard, Zion, 1st vice-pres., Wm. Doherty, Eglinton; 2nd vice-pres., L. W. Smith, Millbrook; secretary, J. Lockie Wilson, Toronto; treasurer, T. A. Patterson, Ellesmere.

THE ONTARIO FAIRS AND EXHIBITIONS' ASSOCIATION.

The fifteenth annual convention of the Ontario Association of Fairs and Exhibitions was recently held in Toronto. The following were the officers elected for the year 1915: President, J. C. Stuart, Osgoode; first vice-president, William Scarf, Durham; second vice-president, L. C. J. Bull, Brampton; secretary and editor, J. Lockie Wilson, Toronto; treasurer, Alex. McFarlane, Otterville.

NOVA SCOTIA FARMERS' ASSOCIATION.

The nineteenth annual convention of the Nova Scotia Farmers' Association was held at Antigonish, N.S., on January 26, 27 and 28.

The following officers were elected for the ensuing year:

President, A. S. MacMillan, Antigonish; vice-president, R. J. Messenger, Lawrence-town; second vice-president, William Murray, Union Centre.

Directors:—Rev. Fr. M. Tompkins, Antigonish; Walter Churchill, Yarmouth; Samuel Freeman, Amherst; Wallace Rhodenizer, Bridgewater; John McQueen, Leith's Creek. Exhibition Commissioners:—Howard Kennedy, Alma; F. W. Foster, Kingston.

CANADIAN COUNCIL OF AGRICULTURE.

A meeting of the Canadian Council of Agriculture was held in Regina, on February 13th, 1915, at which the following officers were elected for the ensuing year: President, J. A. Maharg, Saskatchewan; vice-president, James Speakman, Alberta; secretary, Roderick McKenzie, Manitoba. The president of the United Farmers of Ontario, to be elected at the convention of that body this month, will be Second Vice-President.

THE AYRSHIRE BREEDERS' ASSOCIATION OF CANADA.

The 44th annual meeting of the Ayrshire Breeders' Association of Canada was held in Montreal on February 9th and 10th. The officers elected were as follows:—

President, A. H. Trimble, Red Deer, Alta.; vice-president, M. St. Marie, Compton, Que.

Directors for Eastern Canada—Hon. Senator Owen, R. R. Ness, P. D. McArthur, Fred McRae, M. St. Marie, L. J. Tarte, Jas. Bryson.

For Western Canada the directors are the same as last year.

Secretary-treasurer, W. F. Stephen, Huntingdon, Que.

RESOLUTIONS.

The following resolutions were adopted:

That a committee be appointed to confer with the executives of other organized Live Stock Associations with the view of organizing an Executive body whose duty will be to assist the live stock interests in the country. While this Committee might be able to assist in many lines of live stock advancement, the one of vital importance now before the stockmen is the question of freight rates which have recent been so increased as to prove detrimental to the live stock interests.

That in the publication of the Herd Book in future, the Record of Performance test be published only once, with English and French headings.

That in future only the cows and bulls that have qualified during the year be printed in the Herd Book of that year.

That in publishing the Herd Book in future, we omit the description of markings, simply stating the general colour, also that the sire of sire and dam be omitted, and that instead of publishing the pounds of milk and fat the record number of the cow be given and the volume in which her test is printed.

That we believe the time has come when all Ayrshires should have some mark of identification, and we believe that the tattoo system is the best for this purpose. We hereby recommend this system to our breeders with a view to making it a permanent rule at some future meeting, that all Ayrshires be thus marked.

That whereas during the past year the Registration Committee have been called upon to pass approval on application forms received at the Record Office, because of inaccuracies, omissions, and discrepancies in these forms, largely caused through carelessness or a lack of thorough knowledge of his herd on the part of the owner, or through lack of information caused by the death or removal of the former owner of an animal, therefore we strongly recommend to our breeders the advisability of keeping private herd records and entering the birth date and sale date of animals therein immediately after birth or sale, taking accurate markings on the diagram, and forwarding all applications for registration and transfer to the Record Office *promptly*. By so doing breeders would save much unnecessary delay in the issuing of the Certificates.

That the rule in regard to the time limit in the Record of Performance Test be left as it is at present, with the exception that the time limit previous to freshening be eliminated in the mature and four year old classes.

That a cup be given each year to the winning two-year-old, three-year old, four-year old and mature classes in the Record of Performance Test, the cup to be of silver and to the value of not more than \$15.00, the score to be on the basis of pounds of milk and butter fat given during the period of test.

That we hereby recommend to all Fair Boards under whose supervision a Dairy Test is conducted, that where there is not now a rule to that effect, that a rule be inserted, that all cows and heifers entered in the test be required to freshen at least SEVEN full days before the test commences.

That in view of the fact that there are many Ayrshire cows that have registered in the Record of Performance test, that we recommend to Fair Boards the advisability of introducing in their respective prize-lists, classes for cows and heifers that have qualified in this test; the awards to be based on points allowed for conformation

and an additional point for every ten pounds of butter fat over and above the amount required for qualification.

That should any Canadian Ayrshire breeder exhibit their herds at the Panama-Pacific Exposition to be held at San Francisco next October, that they be granted, from the funds of the Association, an amount equal to one half the freight rate to and from San Francisco, going and returning by the shortest route.

THE NOVA SCOTIA FRUIT GROWERS' ASSOCIATION.

The annual meeting of the Nova Scotia Fruit Growers' Association was held at Middleton, N.S., from January 20th to 22nd. The officers elected for 1915 are as follows: President, A. E. MacMahon, Aylesford; vice-president, F. A. Chipman, Nictaux; secretary, Manning Ells, Port Williams.

The following resolutions of particular importance to the Fruit Growers were passed:—

RESOLUTIONS.

WHEREAS, it is recognized that an opportunity exists in Great Britain to greatly increase the demand for Nova Scotia apples;

AND WHEREAS, immediate action would take advantage of the great wave of Empire loyalty now in evidence;

THEREFORE RESOLVED, that the Nova Scotia Fruit Growers' Association appoint a committee of five with authority to collect a fund, co-operate with the government, (if thought advisable) and prosecute a vigorous publicity and sales promotion plan in Great Britain.

WHEREAS, recognizing the great work that is being done by G. E. Saunders at Bridgetown in the Dominion Entomological Department on behalf of the Fruit Growers of Nova Scotia;

AND WHEREAS, recognizing the inefficiency of the temporary building now in use,

WE RECOMMEND the Dominion Government to erect a permanent building for the carrying on of this work.

WHEREAS, there has been during the past year an agitation in the press and elsewhere regarding the necessity for adopting a national dish or edible;

AND WHEREAS, the fruit interests of the Dominion in various ways have expressed the wish that the apple should be given the place of honour;

THEREFORE RESOLVED, that this Nova Scotia Fruit Growers' Association recommend the selection of the apple as a national dish or fruit.

WHEREAS, it has been reported by Mr. Sladen, Assistant Dominion Entomologist, that foul brood exists in some of the apiaries of this province,

THEREFORE, RESOLVED, that the Maritime Beekeepers' Association respectfully bring to the attention of Mr. M. Cumming, Secretary for Agriculture, the immediate need of having a competent person appointed to inspect apiaries and give instructions to beekeepers how to combat the disease.

AND FURTHER, RESOLVED, that the local legislature at its next session, be asked to pass an act for the Suppression of Bee Diseases, similar to the Acts of Ontario, Quebec and British Columbia.

WHEREAS, honey exhibited at the Provincial Exhibition at Halifax, has, in the past not been given the importance it demands:—

THEREFORE, RESOLVED, that this Association bring the matter to the attention of the Exhibition Commission through Mr. Hall, their secretary, and request that in future all honey exhibits shall be provided with space in the Horticultural Building, among the fruit and flowers where it naturally belongs.

ONTARIO CORN GROWERS' ASSOCIATION.

The seventh annual show of the Ontario Corn Growers' Association was held early in February in the Armories, Chatham. One hundred silver trophies were offered and over one hundred growers, who did not exhibit last year, competed for these trophies. A feature of the Show was a number of exhibits of farmers' clubs advertising their districts.

At the annual meeting the following officers were appointed for the year 1915:—

Honorary president, Byron Robinson, Wheatley; president, R. W. Knister, Comber; first vice-president, Lester Gregory, Darrewn; second vice-president, L. A. Hankinson, Aylmer; secretary J. W. Noble, B.S.A., District Representative, Essex, Ontario; treasurer, J. H. Coatsworth, Kingsville.

A special committee passed the following resolution, which was unanimously adopted:

"WHEREAS, during the past few years the Ontario Corn Growers' Association and the Canadian Seed Growers' Association, Provincial and Federal officials of the Department of Agriculture and others interested in the corn raising industry of Canada, have been urging all who deal in seed corn to ship their corn on the ear, it having been abundantly demonstrated that seed corn handled in this way retains

its vitality better and gives better results generally; and whereas,

"It is learned that the present tariff rates on seed corn discriminate in favour of shelled corn, it is hereby resolved that this association bring this matter before the Railway Commission for their special consideration. The association asks that corn shipped on the cob, in car lots or less than car lots, be given a lower rating than shelled corn, and further, that all corn shipped from Canadian points to other Canadian points be given at least as low a rating as is given corn shipped from American points to Canadian points."

THE CANADIAN SEED GROWERS' ASSOCIATION.

The eleventh annual convention of the Canadian Seed Growers, Association was held in Ottawa on March 11th and 12th. The following officers were elected. President, Dr. James W. Robertson, Ottawa; vice-presidents, Professor C. E. Zavitz, O.A.C., Guelph, Ont.; G. A. Gigault, Deputy Minister for Agriculture, Quebec; Professor L. S. Klinck, Dean of the Agricultural College, Victoria, B.C.; secretary-treasurer, L. H. Newman, Ottawa.

Executive Council: Professor C. A. Zavitz; Professor Jas. Murray, Macdonald College; C. F. Bailey; Assistant Deputy Minister of Agriculture for Ontario; Professor T. J. Harrison, Manitoba Agricultural College, Winnipeg; F. M. Thompson, Regina, Sask., and L. H. Newman.

The secretary reported that 241 applications for seed had been received during the year as compared with 236 in 1913 and 118 in 1912. Sixty-four seed centres have been established throughout Canada.

Dr. C. C. James delivered an address in which he urged upon the meeting the importance of the work of the Association, more especially at the present time, when the production of food is such an important factor as it will be during the present year. Mr. J. H. Grisdale, Director of Experimental Farms, outlined the systems of crop raising and the production of better seed on the Dominion Experimental Farm. Dr. C. E. Saunders, Dominion Cerealists, presented an interpretation of plot experiments. The work of the Dominion Seed Branch was explained by Mr. George H. Clarke, Seed Commissioner.

An important feature of the meeting was a report from the representative of the Association in eight of the provinces as to what is being done in each of these provinces for the improvement of seed. The Association has issued a catalogue of registered and improved seed produced in 1914 and offered for sale.

The Manitoulin Marketing Association was recently organized at Kagawong, Manitoulin Island, Ont., and is the combination, in a commercial way, of some 12 Farmers' Clubs. The officers of the Association are as follows:

President, W. O. Runnalls, Barrie Island; vice-president, Geo. Strain, Gore Bay; secretary, John Gibson, Foxey; treasurer, Nelson Campbell, Foxey.

The annual convention of the Dairymen's Association of the province of Quebec was held on March 3rd and 4th, at Saint Gabriel de Brandon, Quebec.

The Western Ontario Dairymen's Association, through the contributions of the factorymen and patrons, has contributed \$4,400 to the Red Cross and Belgian Funds.

NEW PUBLICATIONS.

THE DOMINION DEPARTMENT OF AGRICULTURE.

THE DOMINION EXPERIMENTAL FARMS.

Report of Experimental Farms. The twenty-seventh annual report of the Experimental Farms and Stations, which is for the year ending March 31st, 1914, is issued in two volumes. The first volume contains reports of the Director and the Divisions of Chemistry, Field Husbandry and Animal Husbandry. Volume two contains reports of the Divisions of Horticulture, Cereals, Botany, Entomology, Forage Plants, Poultry and Tobacco. Following the plan put into operation the previous year, this report is divided into two sections (a) and (b). Section (a) contains general information as to what is being done on the Experimental Farms System. Section (b) contains detailed reports of the various lines of experimental work under way throughout the System during the year. This latter section is intended more immediately to aid the farmer in the various details of his work.

Seasonable Hints is the title of the latest publication of the Dominion Experimental Farms, the pages of which are replete with suggestions and recommendations made by the officers of the various Divisions of the Dominion Experimental Farms system. In it may be found helpful suggestions regarding the various branches of the live stock industry, fertilizers, forage plants, crop rotations, preparation of seed and of land, weeds,—identification and eradication, management of bees, poultry, fruits, flowers and vegetables.

Circular No. 6 of the Division of Botany, prepared by H. T. Güssow, Dominion Botanist, outlines, in detail, the Regulations under The Destructive Insect and Pest Act governing the Importation, Sale, Shipment and Exportation of the Common or Irish

Potato. (*Solanum tuberosum* L.) An appendix includes the text of The Destructive Insect and Pest Act and the general regulations under this Act governing insects, pests and plant diseases.

Division of Cereals. Summary of Results, 1914, Bulletin No. 81, prepared by Dr. Chas. E. Saunders, Dominion Cerealists, and the Superintendents of the Branch Experimental Farms and Stations, deals with the grain crops of 1914, and gives an account with results of the experiments with cereals conducted at the Central Experimental Farm, Ottawa, and at the Branch Experimental Farms and Stations. A list of recommended varieties of grain for the different provinces is also included.

THE DAIRY AND COLD STORAGE BRANCH.

Bulletin No. 43 consists of The Cold Storage Act of 1907, the Amendments of 1909, the Regulations of March 11, 1910, and the new Regulations of June 20th, 1914. This Act encourages the establishment of cold storage warehouses for the preservation of perishable food products.

THE PROVINCIAL DEPARTMENTS OF AGRICULTURE AND OF EDUCATION.

NOVA SCOTIA.

Rural Science Bulletin. THE AGRICULTURAL GAZETTE has received the first copy of Rural Science Bulletin edited by L. A. DeWolfe, M.Sc., Director Elementary Agricultural Education, Nova Scotia. It deals, in a comprehensive manner, with the subject of Rural Science, telling what Rural Science teachers are, and what they are doing. The leaflet also contains information relative to school exhibitions and other agencies which prove helpful in the rural school work, and concludes with a note, outlining the future of Rural Science and a list of suggested nature topics for the month of February. These suggestions are for the use of teachers in teaching Nature lessons to pupils of rural schools.

ONTARIO.

Plum Culture in Ontario, by F. M. Clement, B.S.A., Director of Horticultural Experiment Station, Vineland Station, Ontario. This is Bulletin No. 226 and includes a study of the present status of the industry, the causes of the lack of interest, an outline of the cultural methods of the most successful growers, a description of a few important commercial varieties of plums, and offers suggestions for the future development of the industry.

Cherry Fruit Flies, by L. Cæsar, B.A., B.S.A., Provincial Entomologist and Assistant Professor of Entomology, O.A.C., Guelph, Ont., and G. J. Spencer, B.S.A., Demonstrator in Entomology. This is Bulletin No. 227, and is the result of several years of observation of insects attacking cherries; these have been identified, one as the White Bodied Cherry Fruit Fly and the other as the Black Bodied Cherry Fruit Fly. The life histories of both these flies are given in this bulletin, together with methods of control. The pages are suitably illustrated, the illustrations showing the flies and the damage done to the cherries, and successful methods of control.

Pure Bred Live Stock Census, 1914, as issued by the Prince Edward County Branch of the Ontario Department of Agriculture, is a complete list of the breeders of pure bred stock in the county, together with the number and ages of all animals of every breed in their possession.

MANITOBA.

Growing Plums in Manitoba, Circular No. 24, is a reprint of a paper delivered by Mr. A. P. Stevenson, Dunstan, Manitoba, before an annual meeting of the Manitoba Horticultural and Forestry Association in the Agricultural College. This circular outlines the general directions for the successful culture of the plum and contains a list of improved native plums that may be successfully grown in the province.

Growing Cherries in Manitoba, Circular No. 25, is a reprint of a paper delivered by Mr. A. P. Stevenson, Dunstan, Manitoba, before an annual meeting of the Manitoba Horticultural and Forestry Association in the Agricultural College. This circular outlines the successful methods of cherry cultivation, and submits a number of varieties suitable for the province.

The Control of Insect Pests in Manitoba. This is circular No. 26, and is a reprint of a paper delivered by Dr. C. Gordon Hewitt, Dominion Entomologist, before an annual meeting of the Manitoba

Horticultural and Forestry Association at the Agricultural College.

Pruning Trees for a Cold Climate, Circular No. 27, is a reprint of a paper delivered by Mr. D. W. Buchanan, late director Buchanan Nurseries Company, St. Charles, Manitoba, before an annual meeting of the Manitoba Horticultural and Forestry Association at the Agricultural College. This circular, while dealing with the pruning of all species of trees, gives most complete directions for the pruning of the apple and plum trees.

Barn Ventilation, Bulletin No. 13, by L. J. Smith, B.S., Professor of Agricultural Engineering, Manitoba Agricultural College, describes the Rutherford and King systems of ventilation, and discusses them in such a manner that they may be helpful to farmers throughout the province in farm building construction.

Care of Cream, Bulletin No. 14, prepared by the Dairy Department, Manitoba Agricultural College, is a general treatise on the following subjects: The Care of Cream for Creameries; The Storing of Ice and the Grading of Cream and Butter.

Manitoba Boys' and Girls' Clubs. Under this caption the Extension Service Section of the Manitoba Agricultural College has issued Bulletin No. 15, which contain the details of the organization of boys' and girls' clubs, and outlines eight contests, providing rules, governing each contest and general instructions for the contestants. These contests are as follows: Farm Mechanics, Fodder Corn Growing, Pig raising, Potato Growing, Poultry Raising, Bread Baking, Sewing, Canning and Preserving.

SASKATCHEWAN.

The Feeding Value of Corn and its Comparison with other Grain for Feeding Purposes, by W. J. Rutherford, Dean of the College of Agriculture, Saskatoon, is a general treatment of corn as a food, outlining its particular value to the animal, and its function, and makes comparisons with other grains for feeding purposes and shows the place of corn in rations for dairy cows and for work horses.

Tree Planting for the Schools of Saskatchewan. This is a special bulletin issued by the Saskatchewan Department of Education, and deals with the natural distribution of the various kinds of trees throughout the province, points out the advantage of forests and forest-stations, what has been done in Saskatchewan, tree-planting in connection with the rural schools, and deals with the subject of tree planting under the headings of "Prepara-

tion of Soil," "Prairie Tree Planting—Ornamental, for Shelter, for Fuel and Fencing," "Care and Management of Plantations," "Suitable Varieties for Plantations and Sandbreaks," "Propagation of Trees" and "Varieties of Trees Suitable for Saskatchewan."

BRITISH COLUMBIA.

Agricultural Education in Public and High Schools. This is Circular No. 1, published by the Department of Education of the province of British Columbia, and constitutes a statement of the policy and plans of the Department of Education with respect to the introduction of elementary agriculture in the public and high schools of the province.

MISCELLANEOUS.

How to Make the Farm Pay. This is an illustrated bulletin of 20 pages issued by the Agricultural Extension Department of the Great Northern Railway, St. Paul, Minn., U.S.A., and outlines the work of the Great Northern in endeavouring to improve the land and raise the level of farm production throughout the country traversed by its lines, and deals with a number of experiments along the various lines of progressive agriculture.

The Imperial Bureau of Entomology, re-printed from Science, N.S., Vol. 37, No. 957, pages 659-660, March 2nd, 1913. In this pamphlet Dr. C. Gordon Hewitt, Dominion Entomologist, outlines the organization known as the Imperial Bureau of Entomology, the services it can render in the matter of control and preventing the spread of insects, and the functions of the organization.

Cornell Rural School Leaflet for Teachers as published by the Department of Rural Education, New York State College of

Agriculture at Cornell University, contains much information relative to subject matter in Nature Study and Elementary Agriculture for 1914-1915 as outlined in the New York State Syllabus for Elementary Schools. This leaflet is profusely illustrated, contains 275 pages, and outlines many practical elementary lessons dealing with plants, birds, insects, trees, and many of the domestic animals.

Rural Survey, County of Huron, Ontario. This is a report of a rural survey of the agricultural, educational, social and religious life of Huron County, Ontario, as prepared for the Huron Survey Committee by the Department of Temperance and Moral Reform of the Methodist Church, the Board of Social Service and Evangelism and the Board of Sabbath Schools and Young People's Societies of the Presbyterian Church. This Survey has the distinction of being the first Rural Survey in Canada, and in making the Survey and preparing the Report, the Co-operative Organizations have aimed to ascertain and display the facts, present the actual conditions, bring into high relief the most striking features, whether good or bad, and make clear a programme or policy for the future.

In the Report the three following points stand out with clearness and emphasis:— (1) The supreme importance of the development in children and young people of the highest character through education and training; (2) that no one institution or movement will solve the country problem, but that all forces—public schools, farmers' organizations, Governmental action, the Church—must unite and co-operate for that end, and (3) that from its natural position and leadership, its trained and educated ministry, complete organization, etc., the Church is the organization that is best qualified to lead in the rehabilitation of the country.

NOTES.

In the report of the Board of Agriculture for Scotland for February the area under wheat in Scotland this year is estimated to be 10 per cent greater than last year.

Mr. James Brown, B.S.A., who has been acting as an assistant in the Peel County Branch of the Ontario Department of Agriculture, has been appointed to the staff of the Manitoba Agricultural College, Winnipeg. Mr. W. J. Stark, B.S.A., of Kent County, has been appointed to fill the vacancy.

An appeal issued to the farmers of Austria by the Austrian Minister of Agriculture, in which he urged them not to leave a single plot of ground anywhere uncultivated, has been followed by a pre-emptory decree by the Austrian government, ordering land owners to sow, immediately, every available part of their ground with spring wheat. Where necessary, the local authorities are empowered by the decree to provide labour for this work and to recover from the sale of plots the expenditure incurred. Failure to comply with the decree is punishable by heavy fines or imprisonment.

Commencing March 10th and ending April 2nd, a farmers' short course in steam traction engineering will be given at the Manitoba Agricultural College, Winnipeg. The course will cover all phases of practical steam engine operation, together with a thorough study of all the technical parts of the engine.

The Extension Department of the University of Saskatchewan arranged short courses at the following points:—Luseland, February 16-17; Hanley, February 19-20; Grenfell, February 22-23; Windthorst, February 25-27; Qu'Appelle, March 1-3; Creelman, March 5-6; Arcola, March 8-10; Redvers, March 12-13; Cardnuff, March 16-17; Alameda, March 18-19; Weyburn, March 22-24.

The New Brunswick Department of Agriculture announces a series of lectures and demonstrations in the several branches of farming to be held at Sussex from the second to the twenty-seventh of March. The subjects of study for the first two weeks will include Dairying, Horticulture, Poultry, Beekeeping, etc., for the last two they will be Live Stock, Field Crops and Soil Management in their different phases. For those who are unable to come for the longer period a special three days' course will be given on March 25th, 26th and 27th.

The need for education in methods of highway construction and maintenance in Manitoba has led to arrangements being made for the holding of a short course and convention at the Manitoba Agricultural College, Winnipeg, beginning March 3rd.

It is planned to have the course as practical as possible, and to deal with such subjects as road drainage, materials for culverts, road surveys, road surfaces, repair of roads and cost of building and maintaining various classes of highways. Prominent highway builders will be brought from Ontario, and the States to the south, to supplement the force of local engineers who will lecture and demonstrate on the various subjects. By arousing a greater interest in better highway construction, it is believed that a great saving can be effected in road building.

During the month of February short courses in Agriculture were held at the Regina College, Regina, and at the Moose Jaw College, Moose Jaw, Saskatchewan. The lecturers at these short courses were Professors Bracken, Shaw, Baker and Smith of the College of Agriculture, Saskatoon, Saskatchewan.

That the gift of her Royal Highness the Duchess of Connaught of a box of maple sugar to every member of the first Canadian contingent has resulted in quite an unexpected boom to the industry throughout the Dominion is shown in a cable received from Lord Stamfordham, Secretary to his Majesty the King, notifying her Royal Highness that the Canadian product is to be found not only on the Royal table but also in every hotel and large store in London.

As a token of their appreciation the Maple Sugar and Syrup Co-operative Agricultural Association presented to Her Royal Highness an engrossed address bearing more than three thousand signatures. The address reads as follows:—

"To Her Royal Highness the Duchess of Connaught and Strathearn:

"Your Royal Highness:—

"We, the undersigned representatives of the Maple Syrup and Sugar Producers of the Dominion, recognizing that Your Royal Highness' generous gift of maple sugar to the Canadian troops abroad has had the effect of enormously increasing the popularity of Canada's most distinctive and typical national product, both at home and in Great Britain, and therefore of laying the foundation of what promises to become an important industry, beg to tender to Your Royal Highness our sincere and hearty thanks.

The timely fostering of this industry, which, although it might be a source of vast wealth to our country, has hitherto had to maintain an unequal and inequitable battle against the forces of adulteration will not be amongst the least of Your Royal Highness' titles to the remembrance and the gratitude of the people, and especially the farmers of Canada."

Corn is called the "king of the grains" all over the middle West states. It is poor in protein and ash, but rich in starch and oil. It is used largely for feeding to hogs and beef cattle for fattening purposes and to horses at work in winter. It is, however, no better than barley or wheat in this respect, except that it is more palatable than either. It is too poor in protein and ash to feed exclusively to young animals, dairy cows or to breeding animals. Corn is not a balanced ration and must be mixed with other grains such as oats, bran, shorts and ground alfalfa.—*Professor W. J. Rutherford.*

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- Increased Yields Through Better Seed, *Country Life in Canada*, Winnipeg, February, 1915, page 5.
- Agricultural Education in British Columbia, J. W. Gibson, M. A., Director Elementary Agricultural Education, *The British Columbia Fruit and Farm*, Vancouver, February, 1915, page 516.
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- For a New Generation of Farmers. Practical Training Urged for City and Country Boys,
Canadian Finance, Winnipeg, March 3, 1915, page 201.
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- Agriculture's Conquest of the Atmosphere. A fascinating account of the Romance of Alfalfa and of the Work of The Great Hansen,
Dr. C. C. James, *Prairie Farm and Home*, Regina, March 3, 1915, page 2.

"Efficiency is the power of doing one's most and best, in the shortest time and easiest way to the satisfaction of all concerned."

DIRECTORY OF THE DEPARTMENT OF AGRICULTURE.

Minister.....	The Honourable Martin Burrell.
Private Secretary.....	William Ide, B.A.
Deputy Minister.....	Geo. F. O'Halloran, B.A., B.C.L.
Assistant Deputy Minister and Secretary.....	Lt.-Col. A. L. F. Jarvis, I.S.O.
Commissioner of Agriculture.....	C. C. James, C.M.G., M.A., LL.D.
Chief Translator.....	C. E. Mortureux, B.S.A.

The Dominion Experimental Farms Branch... Director, J. H. Grisdale, B. Agr.

On the Central Experimental Farm and twenty Branch Farms and Stations distributed over Canada, conducts research and experiments in animal, field, orchard, garden and greenhouse husbandry, distributes superior seeds, analyzes and tests fertilizers and feeding stuffs, studies diseases of plants and administers ordinances for their control, and demonstrates what are of value.

The Dairy and Cold Storage Branch..... Commissioner, J. A. Ruddick.

Encourages and assists in the development of the dairying industry and the improvement in the storage, transportation, sale and trade in agricultural products; administers the Dairy Industry Act (1914), the Cold Storage Act (1907), and the Cold Storage Warehouse Act (1914).

The Seed Branch..... Commissioner, George H. Clark, B.S.A.

Encourages the production and use of superior seed, the production of farm and garden crops, tests seeds for farmers and seed merchants and administers the Seed Control Act.

The Live Stock Branch..... Commissioner, John Bright.

Encourages and assists the development of the live stock industry.

The Health of Animals Branch..... Veterinary Director General, Frederick Torrance, B.A., D.V.S.

Administers the Animals Contagious Diseases Act and the Meat and Canned Food Act. Protects Canadian live stock from contagious diseases.

Entomological Branch... Dominion Entomologist, C. Gordon Hewitt, D.Sc.

Conducts investigations on insects in relation to agriculture, encourages the use of methods of prevention and control and administers the Insects and Pests Section of the Destructive Insect and Pest Act.

The Fruit Branch..... Commissioner, Donald Johnson.

Encourages the development of the fruit industry along commercial lines. Also administers Part IX of the Inspection and Sale Act, relating to fruit and fruit packages.

The International Institute of Agriculture... Canadian Commissioner, T. K. Doherty, LL.B.

Supplies Institute at Rome statistics and official information respecting agriculture in Canada and distributes in Canada, in the Bulletin of Foreign Agricultural Intelligence, corresponding information from fifty-two adhering countries.

The Publications Branch..... Editor and Chief, J. B. Spencer B.S.A.

Distributes the publications of the Department and edits The Agricultural Gazette of Canada.

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